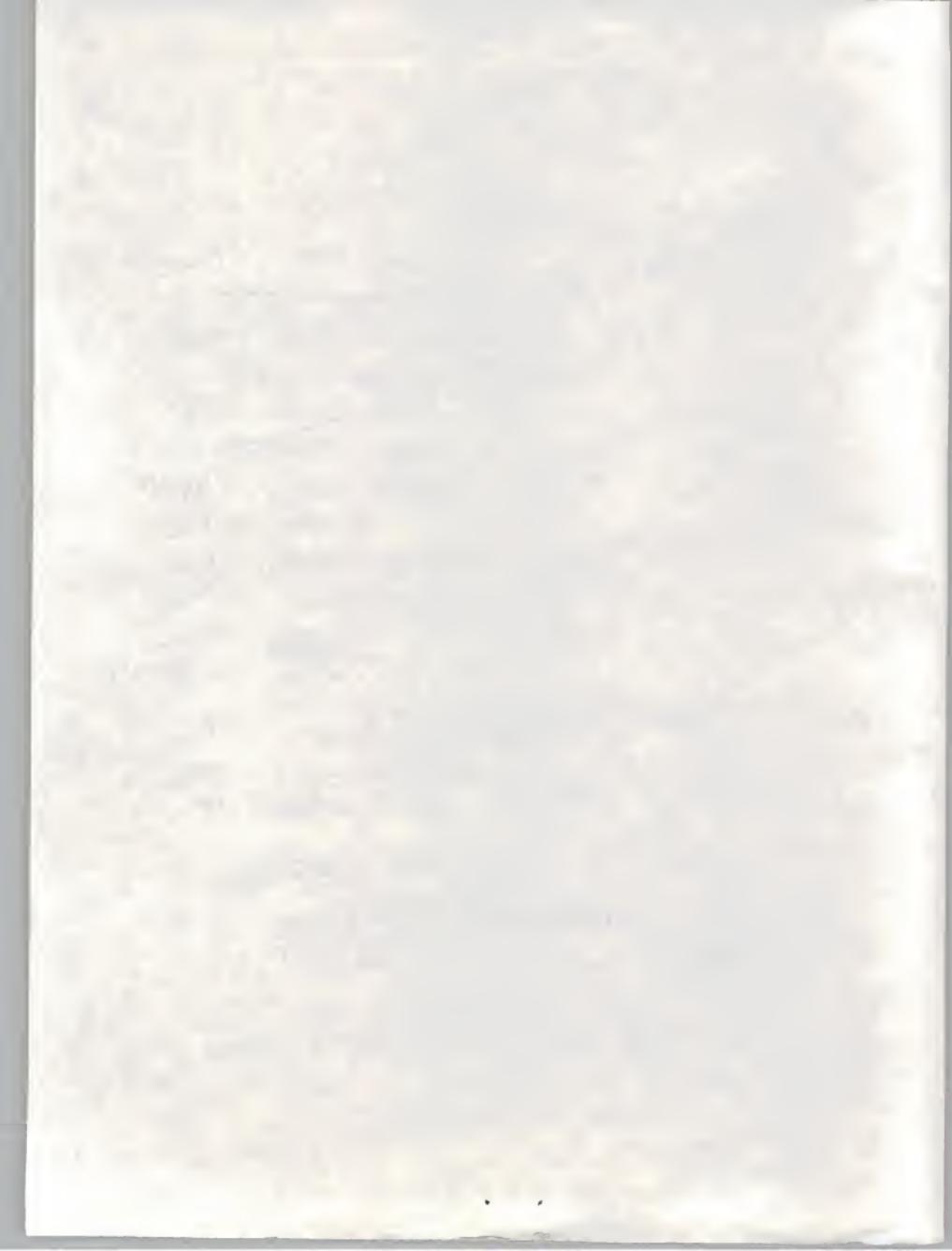


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- 7. EXECUTIVE OVERVIEW
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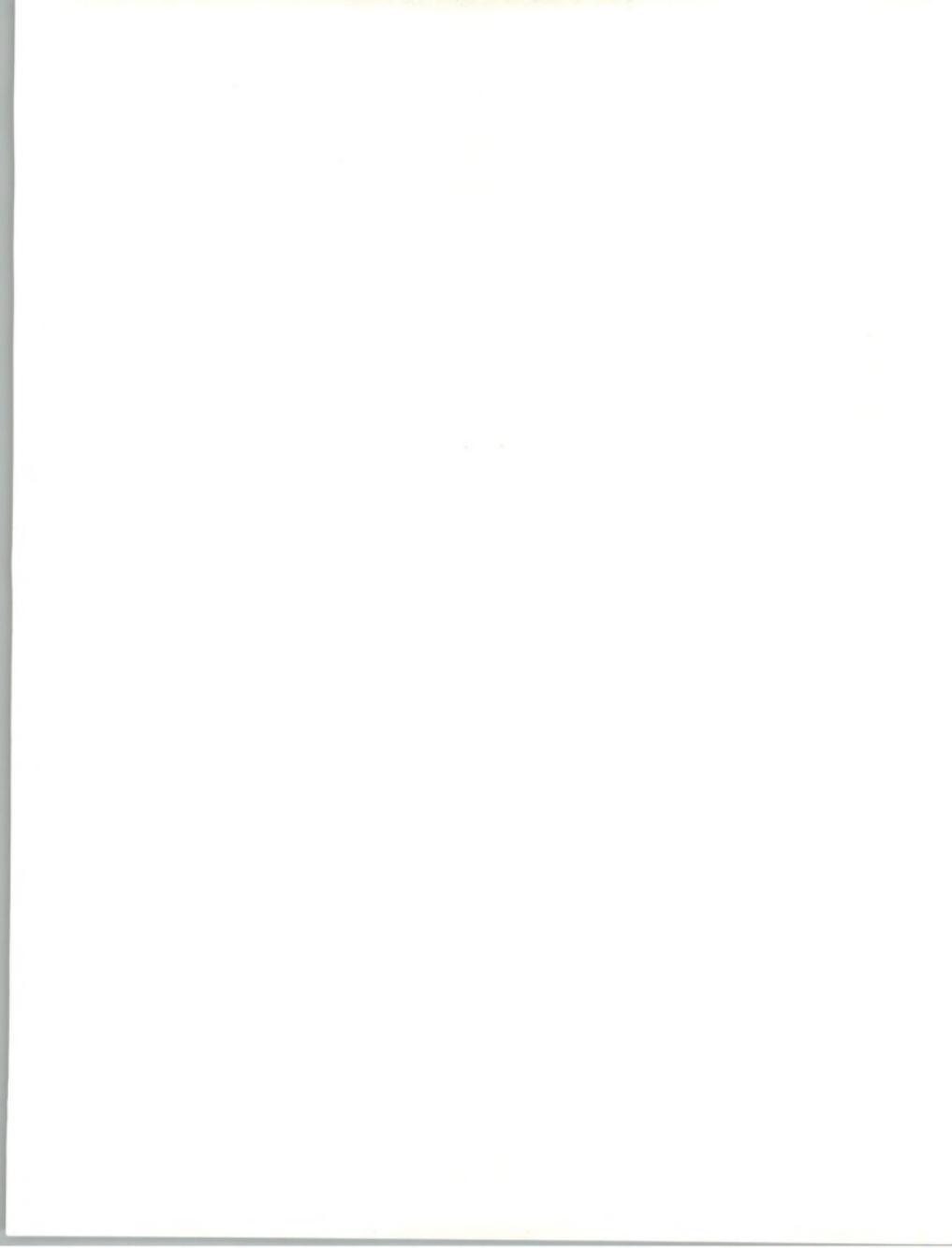
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***U.S. Industry-Specific Markets, 1987-1992
Retail Distribution***

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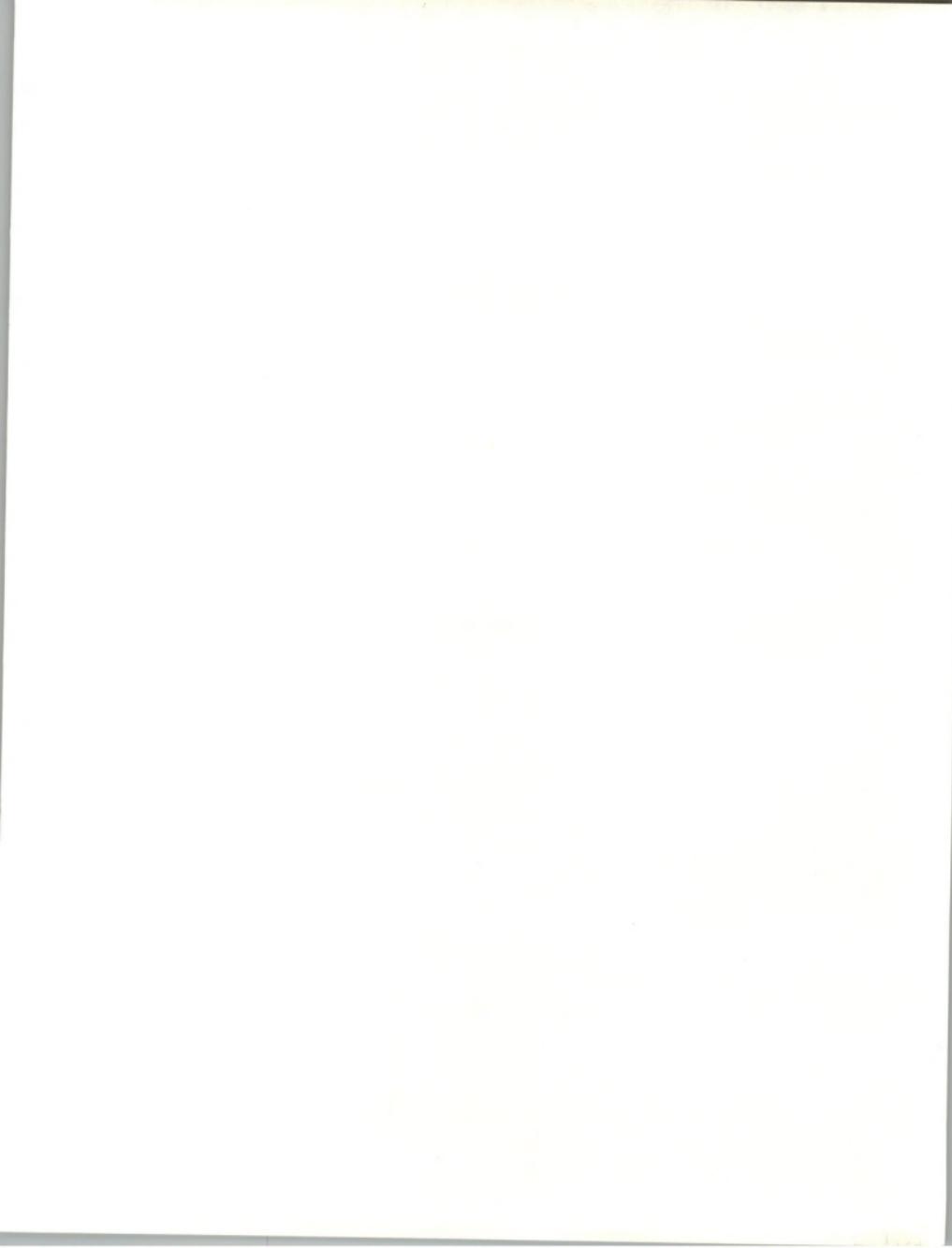


Table of Contents

I	Issues, Trends, and Events	III-RD-1
	A. Introduction	III-RD-1
	B. The Automation Decision	III-RD-2
	C. Point of Sale	III-RD-2
	D. Laser Scanner and Optical Character Recognition Devices	III-RD-3
	E. Point of Sale Services	III-RD-4
	F. Electronic Data Interchange	III-RD-6
	G. Alternative Marketing Techniques	III-RD-7
	H. Department Stores	III-RD-8
	I. Specialty Shops	III-RD-10
	J. Food Retailers	III-RD-12
	K. Eating and Drinking Establishments	III-RD-13
	L. Automobile Dealerships	III-RD-15
	M. Gasoline Service Stations	III-RD-16
II	Market Forecasts	III-RD-19
	A. Introduction	III-RD-19
	B. Processing Services	III-RD-19
	C. Software Products	III-RD-22
	D. Turnkey Systems	III-RD-23
III	Competitive Considerations	III-RD-25
	A. Introduction	III-RD-25
	B. Vendor Profiles	III-RD-26
	1. Datamap, Inc.	III-RD-26
	a. Products/Services	III-RD-26
	b. Markets Served	III-RD-27
	c. Company Strategy	III-RD-27
	d. Recent Activities	III-RD-27
	e. Future Directions	III-RD-27



Table of Contents (Continued)

2. Electronic Data Systems-Dealer Information Systems Division	III-RD-28
a. Products/Services	III-RD-28
b. Markets Served	III-RD-29
c. Company Strategy	III-RD-29
d. Recent Activities	III-RD-29
e. Future Directions	III-RD-29
3. MPSI Systems, Inc.	III-RD-30
a. Products/Services	III-RD-30
b. Markets Served	III-RD-31
c. Company Strategy	III-RD-32
d. Recent Activities	III-RD-32
e. Future Directions	III-RD-32
4. Retail Solutions, Inc.	III-RD-32
a. Products/Services	III-RD-32
b. Markets Served	III-RD-33
c. Company Strategy	III-RD-34
d. Recent Activities	III-RD-34
e. Future Directions	III-RD-34
5. Reynolds & Reynolds Company	III-RD-34
a. Products/Services	III-RD-34
b. Markets Served	III-RD-36
c. Company Strategy	III-RD-37
d. Recent Activities	III-RD-37
e. Future Directions	III-RD-37
6. TRW Information Services	III-RD-37
a. Products/Services	III-RD-37
b. Markets Served	III-RD-39
c. Company Strategy	III-RD-39
d. Recent Activities	III-RD-40
7. Telecredit, Inc.	III-RD-40
a. Products/Services	III-RD-40
b. Markets Served	III-RD-42
c. Company Strategy	III-RD-42
d. Recent Activities	III-RD-42
e. Future Directions	III-RD-42
8. 3PM, Inc.	III-RD-43
a. Products/Services	III-RD-43
b. Markets Served	III-RD-45
c. Company Strategy	III-RD-45
d. Recent Activities	III-RD-45
9. World Wide Chain Store Systems Ltd.	III-RD-45
a. Products/Services	III-RD-45



Table of Contents (Continued)

	b. Markets Served	III-RD-46
	c. Company Strategy	III-RD-46
IV	Information Systems Department	III-RD-47
	A. Driving Forces	III-RD-47
	B. Issues and Objectives	III-RD-48
	C. Impact of Technology	III-RD-50
	D. Budget Analysis	III-RD-51
V	New Opportunities	III-RD-55
RD-A	Appendix RD: Forecast Data Base	III-RD-57



Exhibits

II

- 1 Retail Distribution Sector Forecast –
Industry-Specific Information Services,
1987 - 1992 III-RD-20
- 2 Retail Distribution Segment Forecast
Comparison – Industry-Specific Information
Services, 1987 - 1992 III-RD-21

IV

- 1 Retail – Driving Forces III-RD-48
- 2 Retail – Issues and Objectives III-RD-49
- 3 Retail – Impact of Technology III-RD-51
- 4 1986 Budget Distribution and 1986/1987
Changes in the Retail Distribution Sector III-RD-53

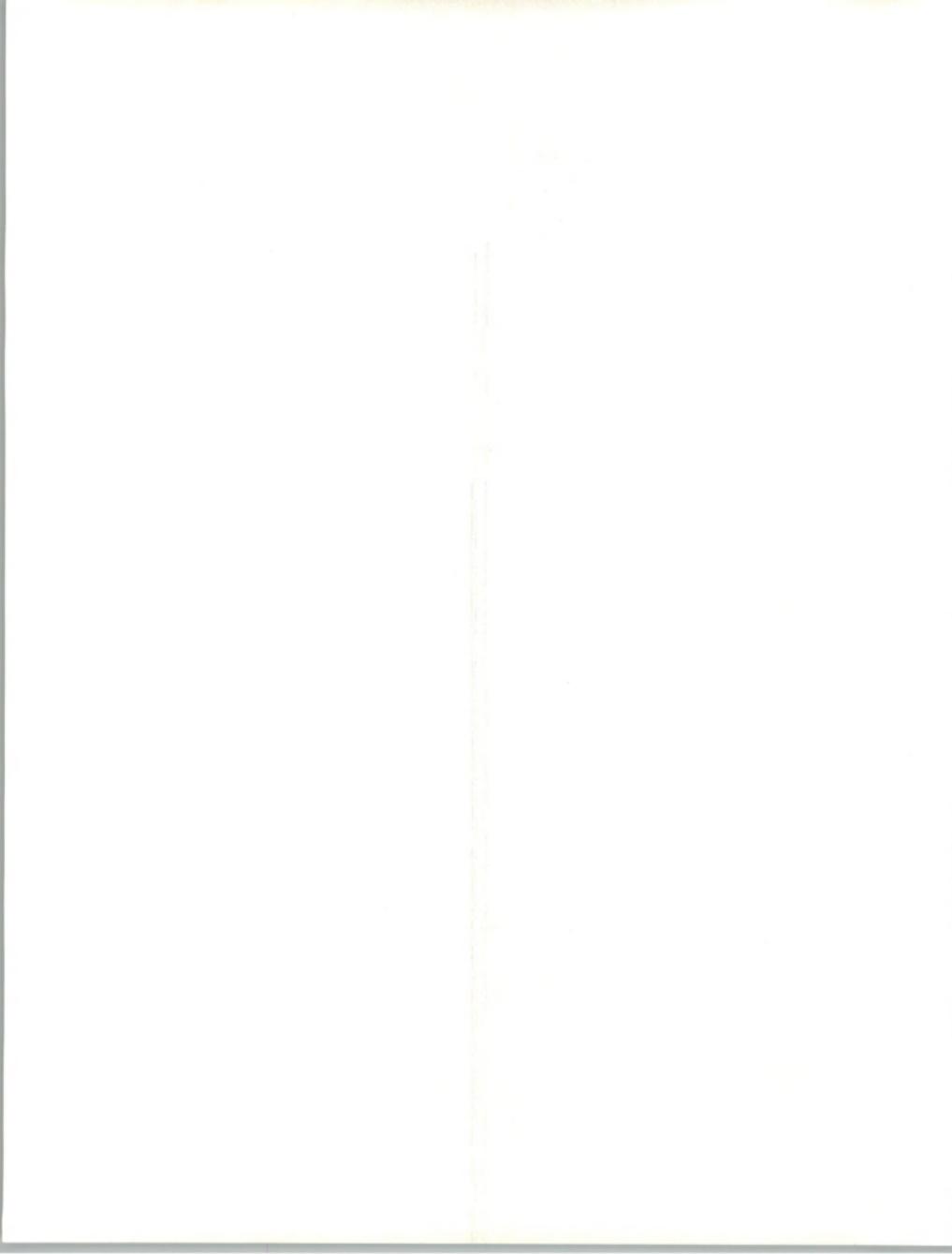
RD-A

- RD-A-1 Distribution Industry Sector – Retail
Expenditures Forecast by Delivery
Mode, 1986 - 1992 III-RD-58





Issues, Trends, and Events



I

Issues, Trends, and Events

A

Introduction

The segments included in the retail distribution sector are:

- Department stores.
- Specialty stores.
- Food retailers.
- Automobile dealerships.
- Gasoline service stations.

However, the market will also be discussed in terms of the following categories of ownership:

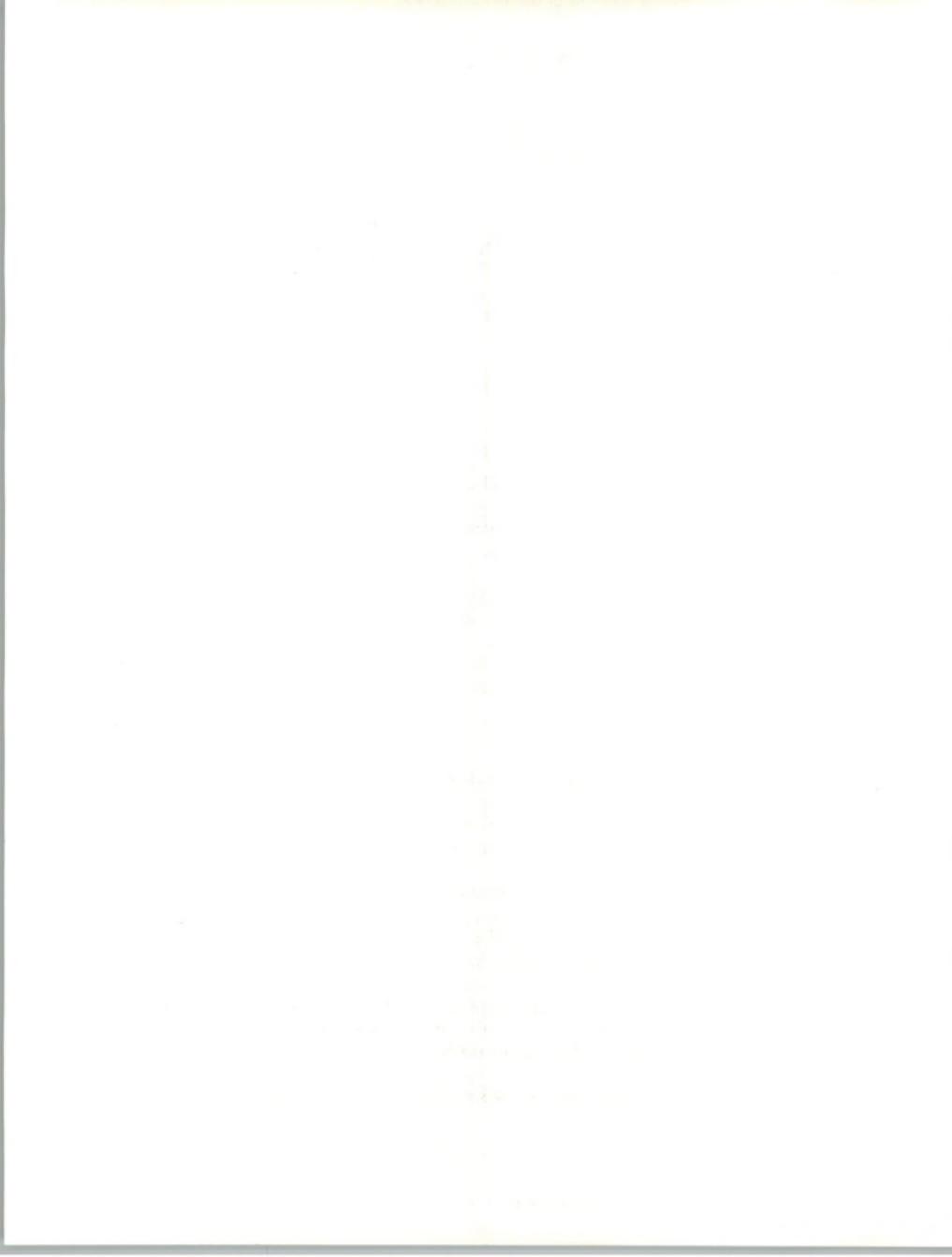
- Chain stores
- Franchises
- Independent retailers

Chain stores are two or more stores owned and operated by one firm. Chain store operations typically have centralized purchasing.

Franchise stores are locally owned and operated but the franchisor usually retains control over the rights to the product or service (i.e., quality control). Franchisees are usually able to purchase most of their supplies from the franchisor.

- Some franchise organizations also have company-owned stores, which are owned and operated by company employees. These stores are similar to chain stores.

Independent stores are the most numerous. They are stores that are not



part of a chain or franchise. They are independently owned and operated and do their own purchasing.

Stores in each of the market segments can be part of a chain or franchise or independently owned. Chain stores and franchises come in many sizes. There are national ones or regional ones. Additionally, national and regional chains and franchises may have few or many outlets.

B**The Automation Decision**

Depending on the type of ownership, the automation decision is made at different levels.

In chain stores decisions are usually made at the corporate level, then implemented down through the outlet level. Corporate management decides which systems and applications to use and also sets the time table for implementation.

Some franchises have developed systems for their company-owned stores and offer them to independent franchise owners. The franchisees usually have a choice of purchasing the systems developed or recommended by the franchisor or purchasing their own systems. Systems purchased through the franchisor may be less expensive and the franchisee is assured that the systems can generate the information required by the franchisor.

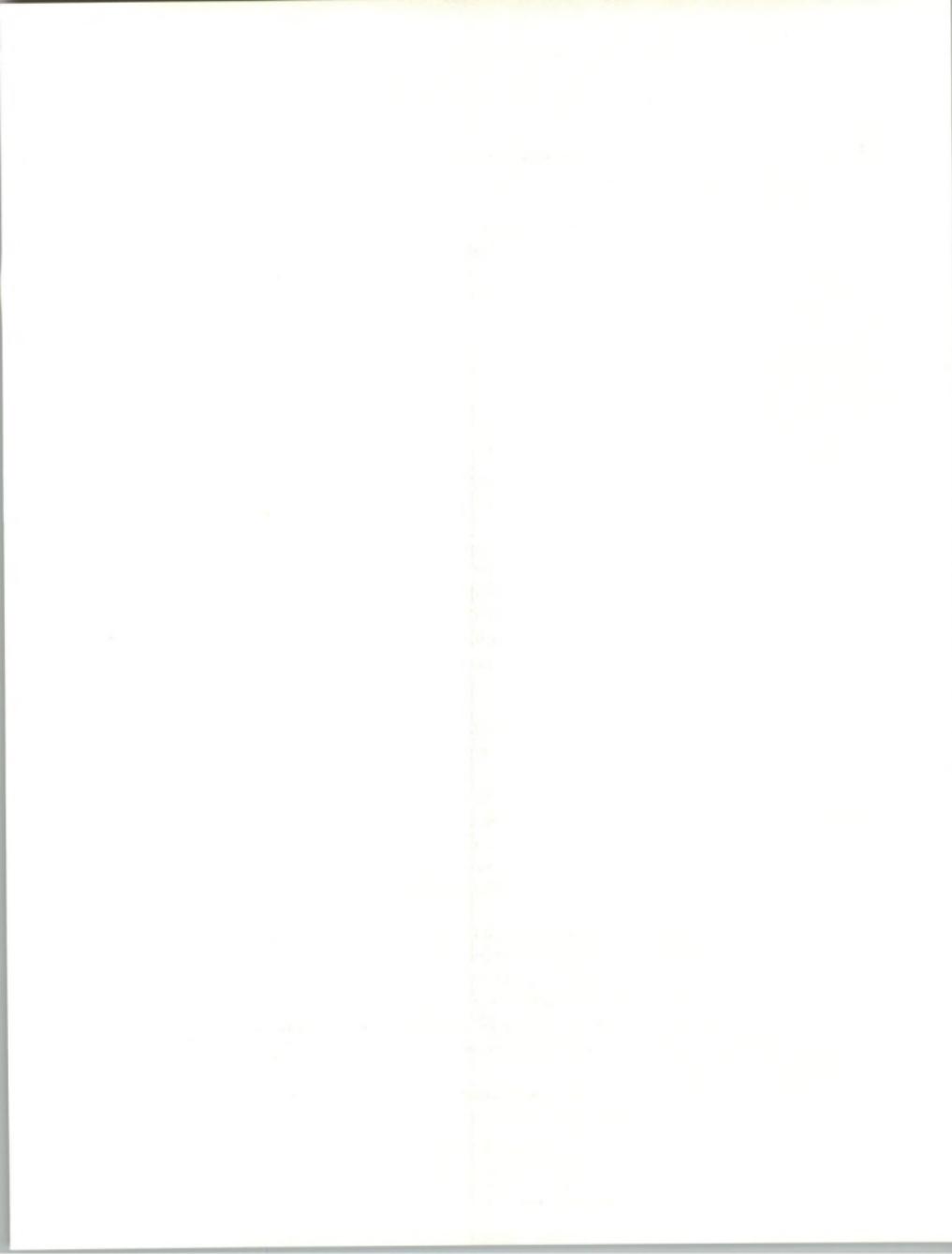
Independent retailers decide for themselves first, whether or not to automate, and second, which systems to use.

C**Point of Sale**

Devices that facilitate the processing and recording of sales transactions are known as point of sale (POS) devices. Standalone electronic cash registers, credit authorization or check verification units, and debit card machines are examples of POS devices.

Point of sale systems consist of two parts, back-office mainframes or minicomputers, and POS terminals at the front of the store.

- POS terminals record transaction information for later polling by the central computer. Some POS terminals use laser scanners and optical character recognition devices for information gathering.
- In the back office the transaction data gathered from point of sale is



used for inventory management, credit management, purchasing, sales forecasting, and other applications.

Because the capital costs involved with implementing POS systems are high, the majority of retailers that have installed systems are medium and large chain store operations.

- However, with decreasing prices for hardware and proven benefits of POS systems, there is a trend towards providing individual stores with more computing power by installing personal computers and minicomputers at the outlet site. This gives local management more leeway in running their stores.

The latest generation of POS systems are personal computers equipped with cash drawers.

- These systems can be used as standalone POS terminals or equipped with a modem to communicate with a chain store's headquarters' mainframe or minicomputer system.
- PC-based cash registers are more affordable for smaller retailers since they can function as cash registers during store hours and are available for inventory management, accounting, and other functions after the store closes.
- PC-based POS systems are available as standalone systems or configured as a multiterminal system with an administrative terminal and one or more sales terminals.

POS applications of high interest include:

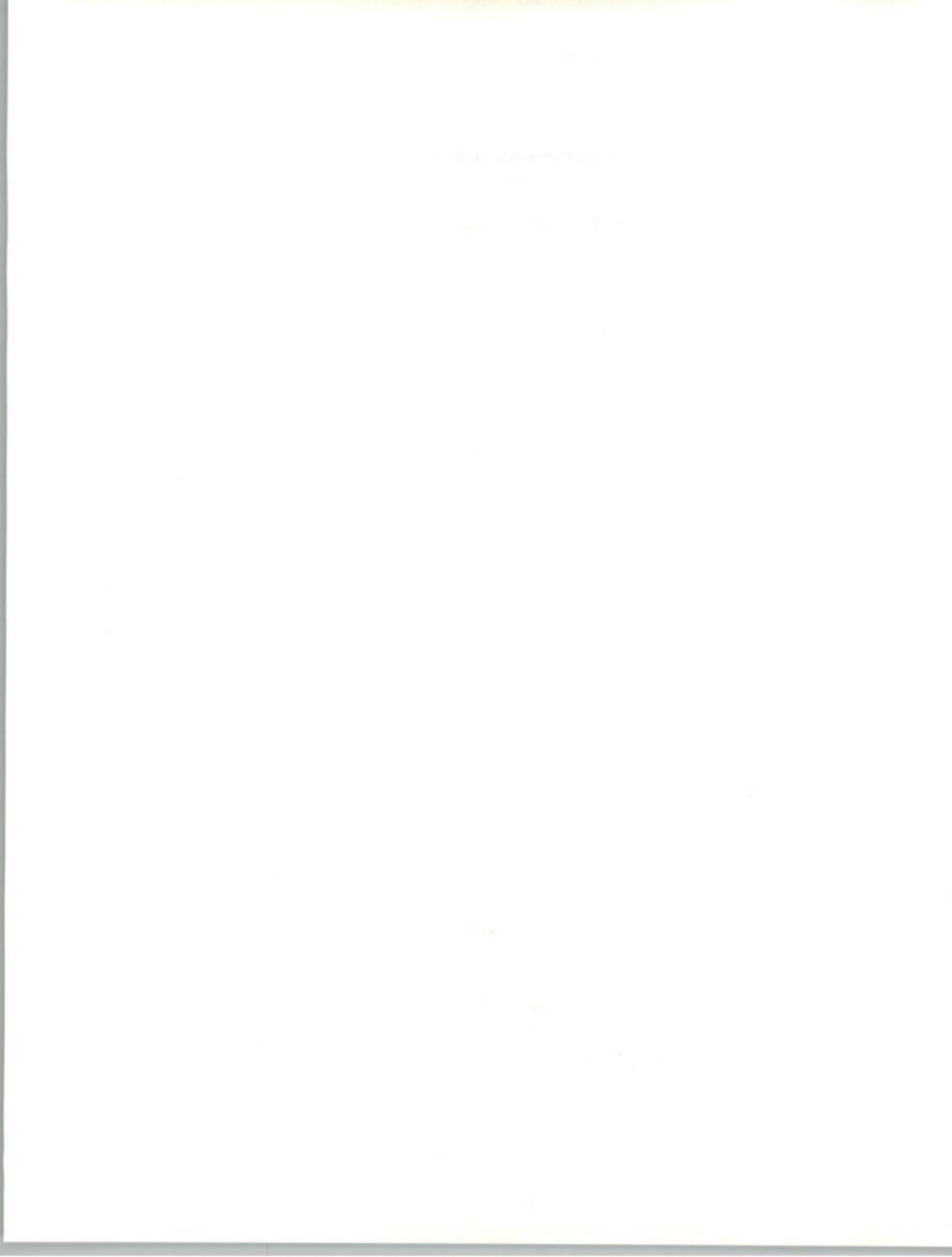
- Price look-up, which enables clerks to check prices and availability of products on the spot.
- Credit management, which helps retailers reduce risks of bad debt.

D

Laser Scanner and Optical Character Recognition Devices

Laser scanners are most commonly used in chain grocery stores. The scanners read special bar-coded Universal Product Code (UPC) labels and provide management with the following benefits:

- An increase in checkout productivity. Scanners eliminate or reduce hand key-entry.



- More accurate checkout. When items are key entered, the potential for errors is quite high. Scanning eliminates these problems because the pricing is done by a computer. Electronic scales hooked to scanners provide more accurate pricing than manual methods for produce.
- Reduction in price-changing and price-marking labor. Each item need not be marked because the scanners read the UPC codes and retrieve the price from the computer files. However, there is often more shelf price maintenance labor required.
- Data that can be combined with product delivery schedules, employee work schedules, and other data to assist management in decision making on which products to stock, how to display them, and how to make their storage and delivery more efficient.
- Customer benefits such as descriptive receipt tape, increased checkout accuracy, and faster checkout.

Optical character recognition and magnetic media reading devices are most commonly found in department and specialty stores.

- The OCR and magnetic media technologies do not require as much capital expenditure as the laser scanners do. The benefits offered are similar to those of laser scanners.
- These devices are used to read tags that are encoded with information that can be used for inventory management and sales analysis. Information such as manufacturer, date of delivery to the store, style, color, size, and pieces shipped can be encoded.

E

Point of Sale Services

POS services support the different methods customers use to pay for purchases.

Debit cards allow customers to pay for purchases using a debit card that automatically deducts the amount of the purchase from their bank accounts.

- Convenience stores, grocery store chains, and oil companies with gasoline service stations are the strongest proponents of debit card services. Reaction from customers, however, has been mixed.

- There is disagreement between bankers and retailers as to who should pay for the debit card terminals and debit card processing services.

More retailers are subscribing to electronic credit card authorization/check guarantee (CCA/CG) services and are switching from their manual, voice, or audio response systems in efforts to lower the cost of curbing fraudulent transactions.

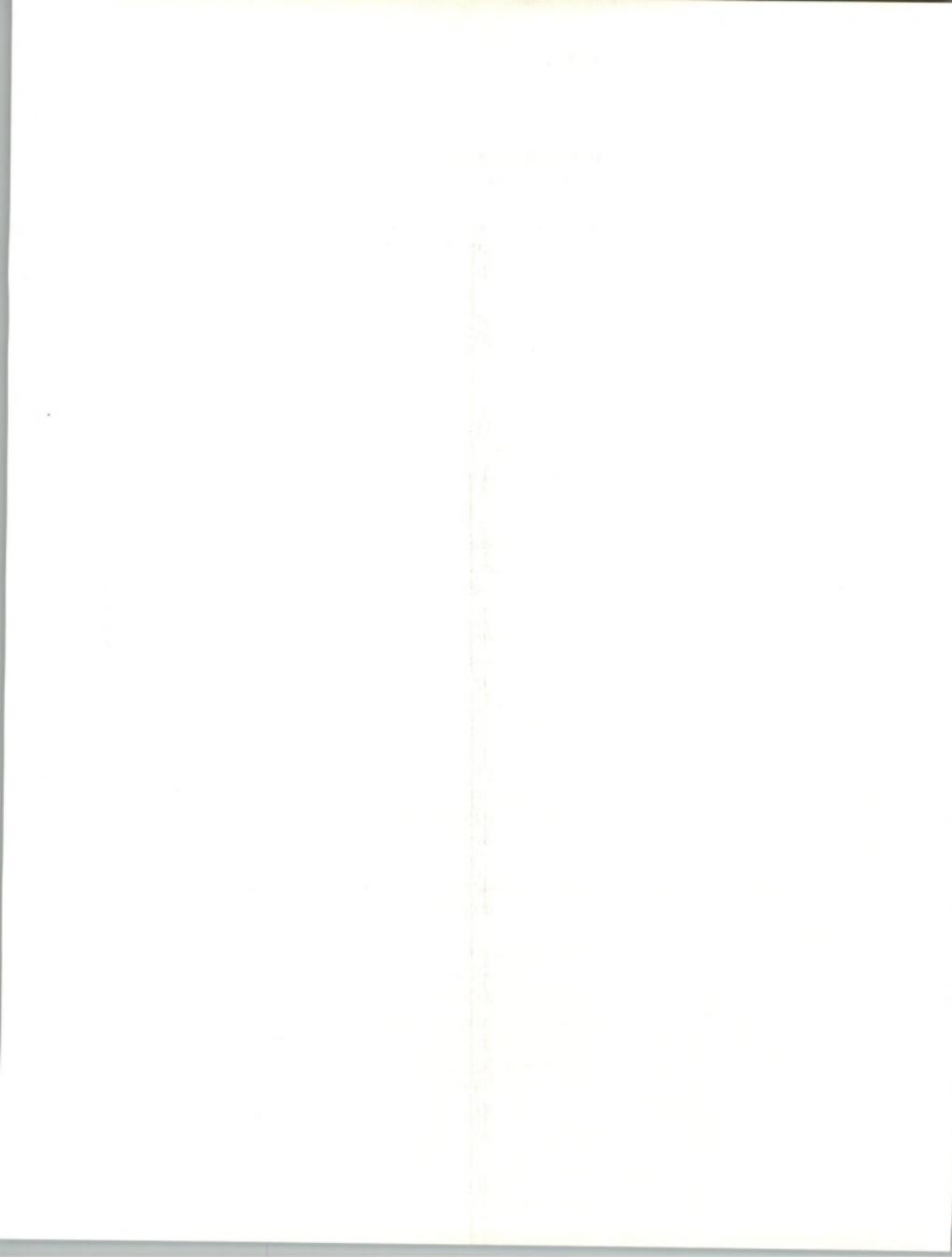
- Fraud is growing rapidly, particularly in credit cards, and is threatening the profit margins of card companies and thereby increasing the cost to retailers.

Costs for electronic CCA/CG services, which are heavily dependent on data communication costs, are much lower than those of voice or audio-response CCA/CG services. The response time for electronic services is also much faster.

Terminal manufacturers are also designing terminals that are easier to use. Credit card or check guarantee card numbers can be read off the magnetic strips instead of hand keyed.

Numerous experiments are testing the economic viability of smart cards, (which are plastic cards that have microprocessors embedded in them) and optical memory cards. Smart cards, and especially optical memory cards have much larger storage capacity than the magnetic stripe cards currently in use.

- These cards can be used in a variety of applications including identification for retail sales or banking transactions, and immediate access to health insurance information, medical histories, driving records, credit histories, and more.
- Drexler Technologies has developed the first optical memory card, LaserCard, to be commercially offered.
 - The LaserCard has storage capacity of up to 2 megabytes or 800 pages on a credit-card-sized piece of plastic. LaserCard can store digitized music and image, and voice data-graphic images including fingerprints, X-rays, photographs, and maps.
 - Blue Cross/Blue Shield of Maryland is using an optical card system called LifeCard to store and update personal identification, insurance, medical history, and other information.



- Twenty-six international companies, including 13 Japanese companies, have funded optical memory card programs.

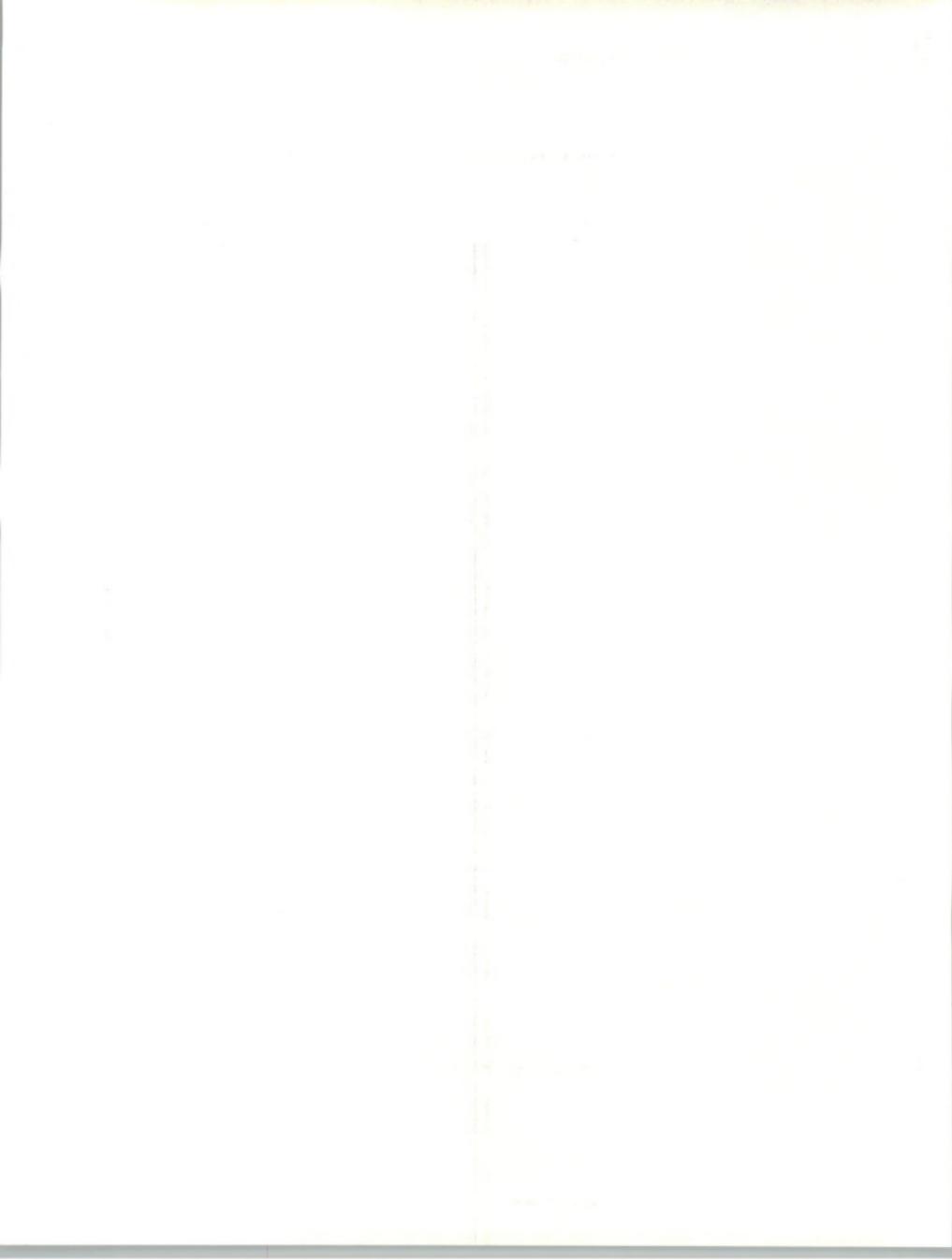
F**Electronic Data Interchange**

Benefits to retailers using EDI services include reduction of expenses and improved delivery service from their suppliers.

However, inhibiting forces of retailers' adoption of EDI include confusion over standards, security concerns, and applications backlogs in information systems departments.

In certain retail segments the driving force in retailers' adoption of EDI services is pressure from suppliers, both wholesalers and manufacturers.

- In the early 1970's, drug wholesalers began supplying pharmacists with hand-held terminals to collect and transmit orders. Currently, over 90% of drug wholesalers use this method; some even refuse to accept paper purchase orders due to their inherent inefficiencies.
- McKesson Corporation, a major wholesale distributor, has implemented an order entry system based on a private EDI network. The Economist system assists McKesson in distributing product lines from nearly 6,000 manufacturers to 2 million retailer/customers from 135 distribution centers. McKesson was also able to reduce its order entry staff from 700 to approximately 20.
- While purchase orders and invoices are important to the apparel industry, the most important EDI transaction is shipping notifications. Ordering, manufacturing, and delivery cycles are traditionally long, with some overseas suppliers taking six months to fill orders.
- U.S. apparel manufacturers believe that "quick response" can be a competitive advantage over foreign suppliers. Manufacturers see EDI shortening ordering/manufacturing/delivery cycles by as much as four to six weeks, supporting reorders of fast-selling merchandise.
- Levi Strauss developed Levilink, a series of electronic services, using GEISCO's EDI*Express for networking and EDI connections to retailers.
- Hagger offers the Hagger Order Transmission (HOT), an EDI system supporting rapid delivery of products to retailers.



- The grocery industry has adopted EDI services as a means to lower costs and improve profit margins.
- General Foods uses EDI with approximately 150 customers, representing 21% of its national case volume for dryline and frozen foods.
- General Mills has set up an EDI network through Tymnet (McDonnell Douglas) to link supermarkets with the company for invoicing.

Leading department stores such as Sears, K-Mart, and J.C. Penny use private EDI networks.

- Sears and J.C. Penny sell excess network capacity for EDI and other uses.
- K-Mart has been using EDI since 1976 and now has over 800 suppliers and transportation carriers on its system.

Universal Product Code (UPC) bar codings are being used to handle goods identification, thus simplifying data input to an EDI system.

Purchase orders and invoices represent the bulk of EDI exchanges.

G

Alternative Marketing Techniques

Retailers are using new technology and new media to display products and increase sales to consumers.

Computerized video shopping services offer merchandise through cable television networks or free-standing kiosks in public places, and in-store marketing systems demonstrate product features and uses.

- Free-standing kiosks or in-store marketing systems may be informational only or may be equipped with a modem for taking credit card orders. Many of these systems are based on microcomputers.
- Informational systems might use videodisks, magnetic disks, or other media, or may allow customers to locate products in the store, scroll through product descriptions, or view demonstrations of the use or benefits of products.
- Transactional systems allow customers to view specific products or to order products in the correct size, style, or color—and to purchase

1.1.1. *Introduction*1.1.2. *Methodology*1.1.3. *Results*1.1.4. *Conclusion*

these items using a charge card. Products are usually shipped from a central warehouse.

- Response to these new marketing techniques has been mixed. Informational systems have been much better received than the transactional systems. However, there has been some success with transactional systems in airports.

A variation of these systems is in-store interactive video shopping systems such as those recently introduced by Levi Strauss and designed by ByVideo Inc., of Sunnyvale, CA.

- These systems use sonar to sense the presence of humans, are equipped with touch screens to allow customers to touch the video bandmember's jeans that they desire more information on, and provide musical entertainment.
- Customers can order jeans delivered to their home by touching the screen and typing in their name and address. The customer must then pay a clerk for the purchase.

H

Department Stores

Department stores usually offer a more limited assortment of products in a wider range of product categories. Variety and catalog stores are included in this category.

There was much turmoil in the retail industry as the ownership status of many major retailers changed with acquisitions, mergers, buyouts, and takeover bids.

- R.H. Macy became a private company in a leveraged buyout to prevent a takeover from outsiders.
- Carter Hawley Hale split itself in half as a result of a \$2 billion takeover bid. The company also sold its John Wanamaker division to Woodward & Lothrop for approximately \$180 million.
- Campeau Corp. paid \$3.7 billion for Allied Stores Corp.
- May Department Stores acquired Associated Dry Goods for \$2.5 billion.



In September 1987 K-Mart announced that it had formed a joint partnership with Bruno's, Inc, a Birmingham (AL)-based grocery food chain, to build "hypermarkets"—very large stores that sell groceries and general merchandise.

Department stores are concentrating on consolidating existing markets and applying stringent cost and inventory controls to enhance return on investment.

- Financial resources are being directed to upgrade existing stores, rather than open new stores.
- Merchandise mix has shifted to items that offer higher markups and more frequent inventory turnover.

Major department store chains such as Sears, K-mart, and J.C. Penny are innovators of new technology for the entire retail distribution sector.

- In 1970 Sears was the first major retailer to install electronic POS systems in its stores for data capture in inventory management. Sears is on its second generation of POS systems.
- J.C. Penny has decentralized much of its purchasing functions, allowing individual stores to tailor buying to their needs and more effectively compete with local merchants.
- K-Mart plans to invest \$40 million on a new GTE Corporation communications network that will combine all data and video communications into one satellite system.
- K-Mart purchased 17,000 credit authorization terminals in 1986 to speed up credit authorization. These terminals will also accept point of sale debit cards.

Department stores are the most likely type of retailers to develop and implement the following systems:

- In-store marketing systems for demonstration of products or uses of products.
- Computer-aided design systems to facilitate designing and redesigning the layout of sales floors, shelves, and displays.

- Price look-up at point of sale to check prices, especially for promotional items.

I**Specialty Shops**

Specialty shops are stores that offer a large assortment of items within limited product categories. Examples of specialty store goods include home furnishings or electronics, jewelry, apparel, shoes, sporting goods, pharmaceuticals, and flowers.

While most specialty stores have similar POS and back-office application needs, most also have needs that are particular to the products they sell.

Drug stores are one of the most highly automated types of specialty stores.

- Most chain drug stores installed or are currently installing electronic cash registers, and inventory and check-out scanners.
- Independents are installing similar equipment at a slower rate primarily because of the costs involved.
- The pharmacy department is an area of high automation interest. The applications being automated include:
 - Dispensing of drugs and recording of prescriptions to aid in inventory control.
 - Patient profiles to prevent adverse drug interactions and to record demographics data and prescription histories.
 - Third-party billing to insurance companies and agencies, such as Medicare.
- Some drug store chains are automating their warehouses in order to reduce costs while improving service to their growing number of stores.
 - Automated warehouses are improving inventory turnover and in-stock positions.
 - Delivery schedules can be streamlined, with most stores receiving delivery or merchandise in a much shorter time than from unautomated warehouses.

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- Independent stores also have the benefits of automated warehouses by buying through drug wholesalers.
- McKesson Corporation's Valu-Rite voluntary drug chain program provides more than 2,000 independent drug stores with McKesson's Value-Added Distribution, computerized ordering and inventory systems, and automated warehouses.
- McKesson serves hospital pharmacies as well as drug store chains.

Jewelry stores, especially independents, are relatively slow to automate. However, as specialized systems for jewelry become more available, many jewelry stores are automating to remain competitive.

Applications of interest in this subsegment include the following:

- Inventory control systems typically allowing jewelers to list and cross-reference items based on color, size, weight, and shape of a stone, as well as the gold or silver that supports it.
- Point of sale software allowing jewelers to display appraisals, repairs, job orders, and other features to prospective buyers without showing prices.
- Accounts receivable or collection systems providing detailed and current information used to reduce delinquencies and improve collector productivity.

Automation in the florist industry is largely due to—and limited to—the Florists' Transworld Delivery (FTD) Association.

In 1980 FTD's Floral Network, Inc. subsidiary began implementation of the Mercury 2000 Network telecommunications system.

- In addition to allowing electronic floral orders to be exchanged among FTD members, the network handles credit card transactions, phone order reporting, billing service transfers, administrative inquiries and messages, and other activities.
- Currently more than 11,000 members buy and/or lease microcomputers, intelligent terminals, modems, and printers from FTD and other vendors.
- FTD serves independent florists as well as florist chains.



Software from 3PM, a subsidiary of McKesson Corporation, is available to FTD members and other florists. Floraserv software applications include financial and accounting functions, POS, and inventory control—as well as marketing/direct mail features.

Florists are widening distribution channels. In addition to multiple stores, some florists hold concessions in supermarkets and general merchandise stores, while others have independent salespeople to sell off the streets.

- These concessions are usually on a consignment basis.
- Many florists need inventory control, accounting, and sales analysis software that will take multiple distribution channels into consideration.

J

Food Retailers

Food retailers include supermarkets; grocery stores; produce, fruit, or meat markets; "mom and pop" stores; convenience stores; and in-store specialty departments such as bakeries, pharmacies, or delicatessens.

The number of food retailers is decreasing and the size of stores is growing. One reason for this trend is merger/acquisition and consolidation activity among some of the largest food retailers.

- In July 1986 Dart Group, Inc. made a bid for Safeway Stores, Inc.; the bid was rejected.
- Later in July 1986 Safeway agreed to be acquired for \$4.2 billion by a Wall Street investment group.
- Great Atlantic and Pacific Tea Company (A&P) acquired a 53-store regional chain in the New York City area in 1986 and a supermarket chain in the Milwaukee area from British American Tobacco in 1985.
- Kroger Company plans to close some of its supermarkets and may sell its 900-store drugstore chain.

Food retailers, specifically large grocery chains, are the most automated of retailers. A large percentage of the nation's large supermarkets already have POS systems installed. Additionally, these stores also represent a very large portion of the installed base of scanners.

- Many retailers are also beginning to use the information gathered from their scanners to maximize selling opportunities.

LITERATURE

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- In response to heightened customer awareness and interest in health foods, some retailers are improving and/or expanding their produce departments.
- In stores that are frequented by affluent customers, some retailers prominently display gourmet or luxury items.
- Store layout and shelf display are two additional areas that retailers are paying more attention to after reviewing scanning data.
- Retailers can provide companies such as A.C. Nielsen, Selling Areas Marketing, Inc., and Information Resources, Inc. with the data gathered from scanners to in turn provide retail packaged goods manufacturers with information that could effect packaging, pricing, advertising, promotions, distribution, or the product itself.

Other applications of high interest to food retailers include:

- Point of sale services including check authorization, debit cards and automated teller machines.
- Monitoring of cashier performance to measure errors and refunds.
- Forecasting systems for the bakery and meat departments to project amounts of each bakery item or cut of meat.
- In-store marketing systems that offer discount coupons, item location, or recipe information.

Small local or regional chains and independent retailers, who seem better able to adjust quickly to changing demographics and shopping habits, are expanding and taking market share away from the large chains.

K

Eating and Drinking Establishments

Eating and drinking establishments include restaurants, bars, delicatessens, and fast-food services.

While all food service establishments have POS devices, manual or electronic cash registers, or POS terminals, many chains, franchises, and larger independent operations are becoming more automated.

As in other retail segments, personal computers are making their way into the retail outlet itself.

- Some fast-food franchisors have installed personal computers in company-owned stores in order to provide local managers with more information for improved management at the store level. The PCs also allow automation of much of the paperwork, leaving managers with more time for managing their stores.
- Computerized bartending systems are helping restaurants and bars to track inventory and pricing, as well as to monitor tabs and conduct sales analyses.
- Many restaurants are installing PCs or PC-based POS systems in order to improve profit margins. The PCs are primarily used for inventory control, menu analysis, payroll and scheduling, and revenue analysis.

General trends in the industry include the following:

- Salads, pasta, vegetables, and other light foods are being added to menus, reflecting heightened consumer awareness of health and nutrition.
- The shift to healthier and/or lighter fare has sometimes been at the expense of meat entrees. Since non-meat dishes are in general less expensive than meat dishes, overall expenditures for eating out may have grown more slowly than if this dietary shift had not occurred.

Some fast-food vendors have begun home delivery service. Chicken, hamburger, and ethnic fast food retailers have followed the lead of pizza sellers in home delivery.

Other fast-food vendors, including Burger King, are experimenting with mobile food vans to make scheduled stops at construction and similar sites and at scheduled functions such as university rallies or community fairs.

An increasing trend is gourmet restaurants and food services making specialty dishes available at home, to customers with limited time to prepare such specialty meals themselves or to visit a restaurant.

1880-1881

L**Automobile Dealerships**

Automobile dealers sell cars, trucks, motorcycles, and recreation vehicles.

A major trend in the automobile dealership market is larger dealerships. Many dealerships are expanding by adding more locations or franchises.

- One reason for this trend is to increase leverage with motor vehicles manufacturers and with financial institutions to obtain more favorable rates on retail financing.
- These dealerships can consolidate business functions such as accounting and computer services.

The major automobile manufacturers are playing a more active role at the customer level and there is a heavy emphasis on communications between manufacturers and their dealers.

- Dealer communication systems poll dealers' computers for financial and customer preference information.

Systems have been developed or are being developed to automate the dealership sales floor, business office, and service and parts departments.

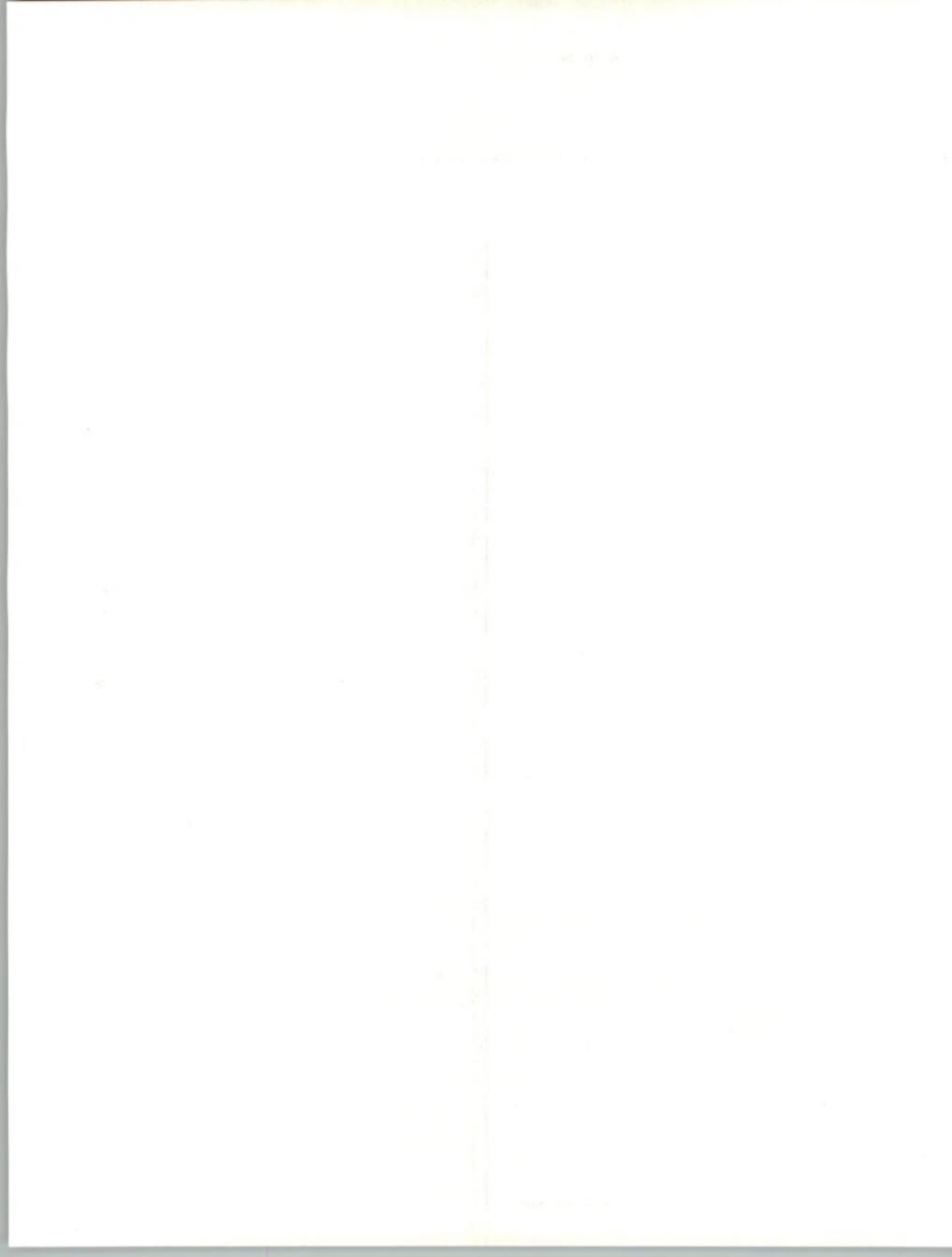
These systems are both internally developed and contracted out to commercial information services vendors for development.

- General Motors, through its Electronic Data Systems (EDS) subsidiary, offers a variety of processing services, turnkey systems, and software products to its dealers.
- Buick has formed a department called Marketing Through Technology to develop its systems internally.

Reynolds and Reynolds formed Manufacturer Services Group, which provides turnkey systems designed to improve communication between manufacturers and their dealers.

Other companies not affiliated with the car makers also offer auto dealership systems. The systems range from packaged software systems and standardized turnkey systems to customized or custom-developed software and turnkey systems.

Applications in which auto dealerships are most interested include the following:



- In-house systems that integrate administrative functions for the sales floor, business office, and the services and parts departments.
- Financing and insurance systems that allow salespeople to show cost comparisons, financing alternatives, and other options to customers.
- Terminals that provide instant credit approval from the manufacturer (i.e., GMAC Instant Credit from General Motors).
- In-store marketing systems using interactive video technology that allow customers to view cars with the options and features of their choice.
- Electronic data interchange systems for parts ordering.

M**Gasoline Service Stations**

Gasoline service stations sell automobile fuel and provide a variety of vehicle-related services.

These retailers have gone through tremendous changes during the past decade. Most of these changes are attempts to increase revenues and boost profit margins.

- At the pumps there is a heavier emphasis on self-service rather than full-service, even among service stations of the major oil companies.
- Some stations offer customers a discount for paying cash for their gasoline purchases, while others (including Arco) will accept only cash.
- Many gasoline service stations now also double as convenience stores offering a variety of groceries, deli items, and fast foods.

In addition, gasoline service stations are some of the first and strongest proponents of electronic payment systems.

- Most of the large oil companies have credit card and/or debit card payment systems in place or in testing.
 - Debit card systems automatically deduct the amount of purchase from the customer's bank account.
 - Credit card verification systems reduce uncollectible accounts.

- Electronic pumps and computerized communications systems will allow customers to insert their bank debit or credit cards into pumps that will automatically bill the amount of purchase to their bank account or credit card.

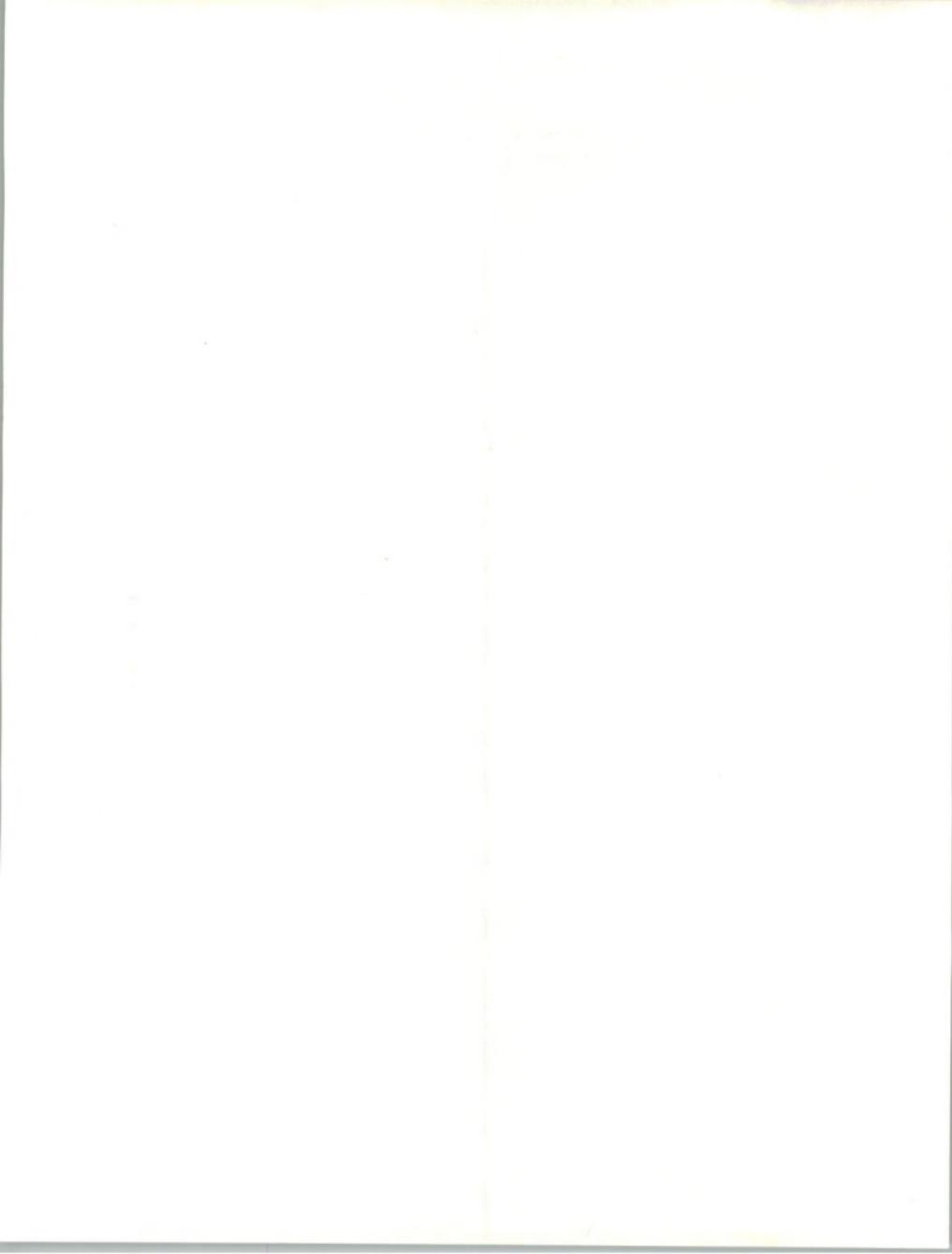
Electronic payment systems are popular because they offer tighter business control, eliminate the need to handle cash, and reduce clerical and accounting efforts.





II

Market Forecasts



II

Market Forecasts

A

Introduction

User expenditures of industry-specific information services for the retail distribution sector will grow 18% annually, increasing from \$1.1 billion in 1987 to \$2.5 billion in 1992. For details, see Exhibits II-1 and II-2 and Appendix RD-A-1.

Processing services user expenditures will enjoy steady growth at 16% annually, from \$677 million in 1987 to \$1.4 billion in 1992.

The growth rate of the turnkey systems market will slow to 16% annually, with user expenditures growing from \$295 million in 1987 to \$630 million in 1992.

User expenditures for applications software will grow at 29% annually, from \$142 million in 1987 to \$501 million in 1992.

B

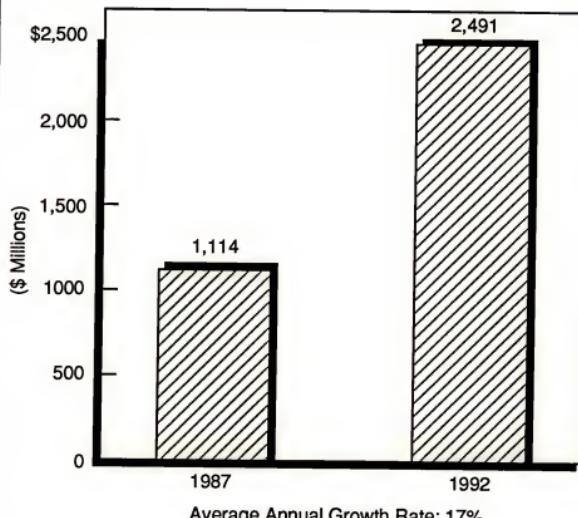
Processing Services

Processing services, the delivery mode with the largest percentage of user expenditures in the sector, will grow at a fairly steady rate of 15% annually.

- One reason for this steady growth is the inability to bring certain processing applications in-house. The best example is credit card authorization and check guarantee.
- Additionally, the retail distribution industry relies heavily on communication. Communication is imperative between retail merchants and their suppliers or manufacturers.

The application with the largest processing volume is credit card authori-

EXHIBIT II-1

**RETAIL DISTRIBUTION SECTOR FORECAST
INDUSTRY-SPECIFIC INFORMATION SERVICES
1987-1992**

zation and check guarantee (CCA/CG) processing services.

- User expenditures for CCA/CG information services are divided into several industry sectors. The retail distribution sector accounts for roughly one-third of CCA/CG expenditures.
- The banking and finance sector accounts for slightly more than one-third of total expenditures. The remaining expenditures are spent by the transportation, services, and other industry sectors.
- This application will continue to account for a large portion of processing services user expenditures.

Another high-volume processing application is automobile dealer communication services.

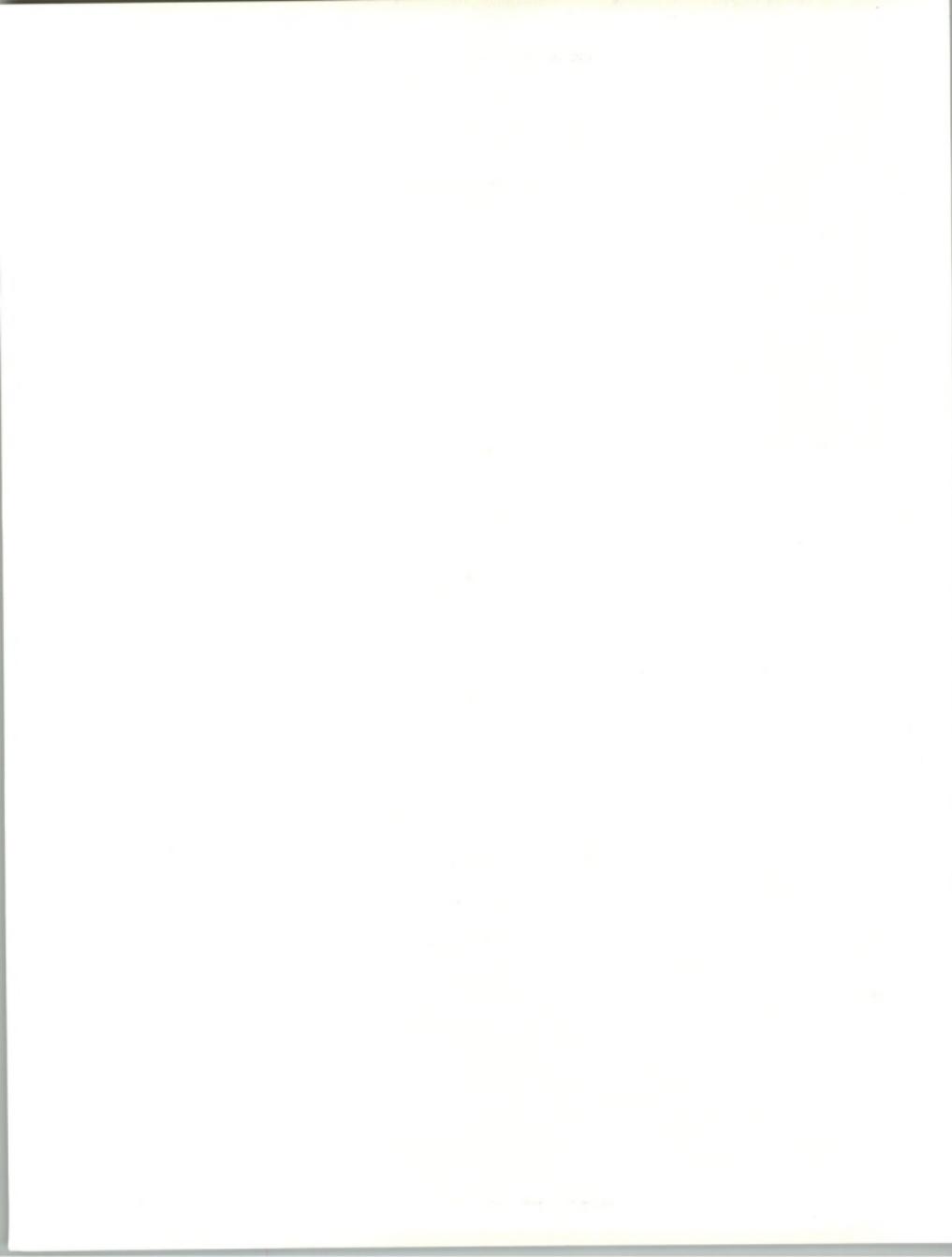
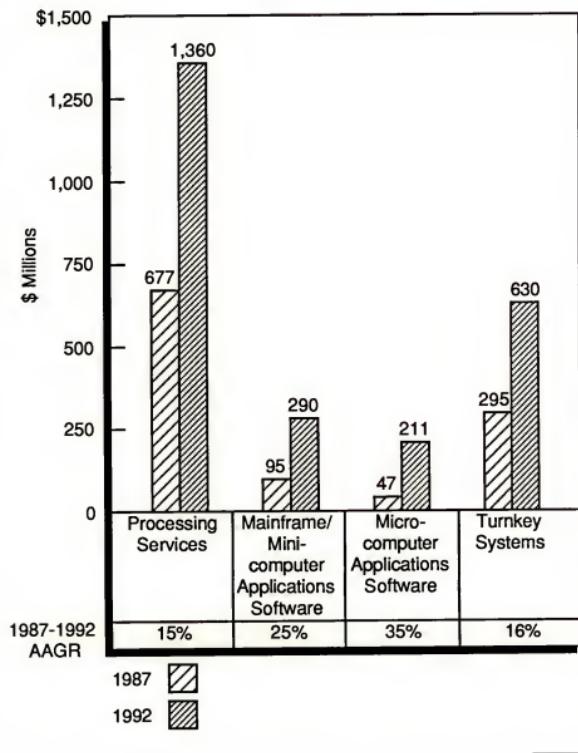


EXHIBIT II-2

**RETAIL DISTRIBUTION SEGMENT
FORECAST COMPARISON
INDUSTRY-SPECIFIC INFORMATION SERVICES
1987-1992**



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- User expenditures for processing services will grow steadily as automobile manufacturers continue to emphasize communication with their dealerships.

Third-party billing processing services for pharmacies and FTD processing services for florists represent a large portion of user expenditures.

Electronic data interchange, as technology evolves, will account for a growing portion of user expenditures.

C

Software Products

Applications software will grow at a faster rate than processing services and turnkey systems, though it grows from a much smaller base.

Growth for mainframe/minicomputer and microcomputer software products will largely be due to retail management systems.

- Demand for these systems is expected to continue as only a small percentage of all retailers currently have such systems installed.
- Retailers of all product categories and of all sizes are installing retail management systems.
- Restaurants and other food services are installing restaurant management systems.
- Many of the applications needed are similar to those in other retail outlets.
- Other systems needed include waste management, menu analysis, service analysis, and order tracking.
- Retail management applications include sales analysis, inventory control, purchasing, merchandise receipts, point-of-sale, communications, and others.

Important functions software vendors are incorporating in their software products are multiuser and multitasking capability. Many vendors also offer multistore versions of their software.

Bar coding is becoming increasingly popular throughout the retail distribution industry, spreading from grocery and pharmaceutical items to apparel and other soft goods. Bar coding is also used for hard goods, including liquor and sporting goods.

- As bar-coding technology moves through the industry, its impact on software will be great.

D**Turnkey Systems**

Turnkey system user expenditures in the retail distribution sector are growing at a rapid rate of 16% annually, compared to the total industry turnkey system average of 9%.

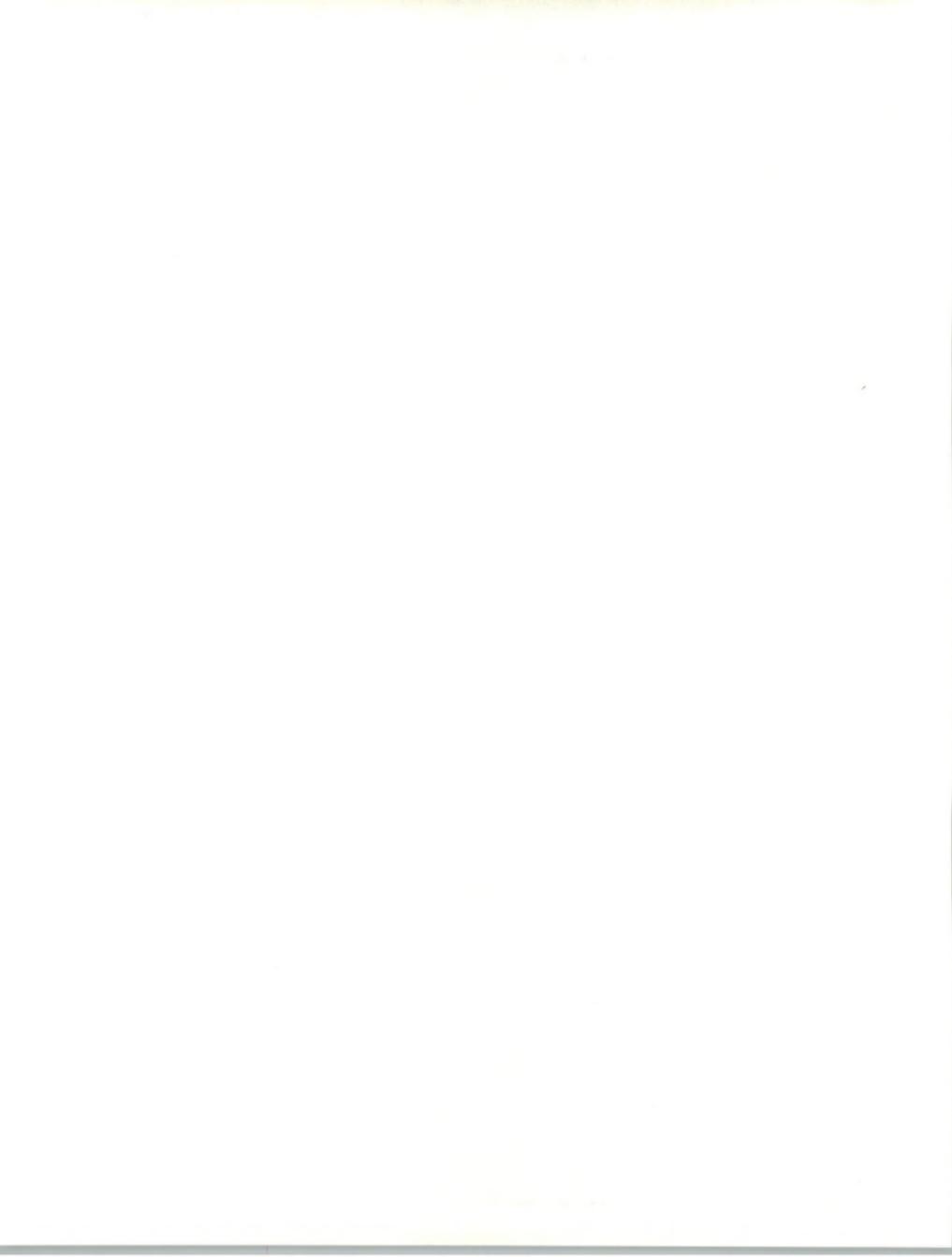
- INPUT includes the CPU, software, disk and tape drives, printers, and similar peripherals purchased as a single solution in the turnkey systems forecast.
- However, this forecast does not include expenditures for electronic cash registers, dumb terminals, debit or credit card authorization terminals, and other such peripherals.

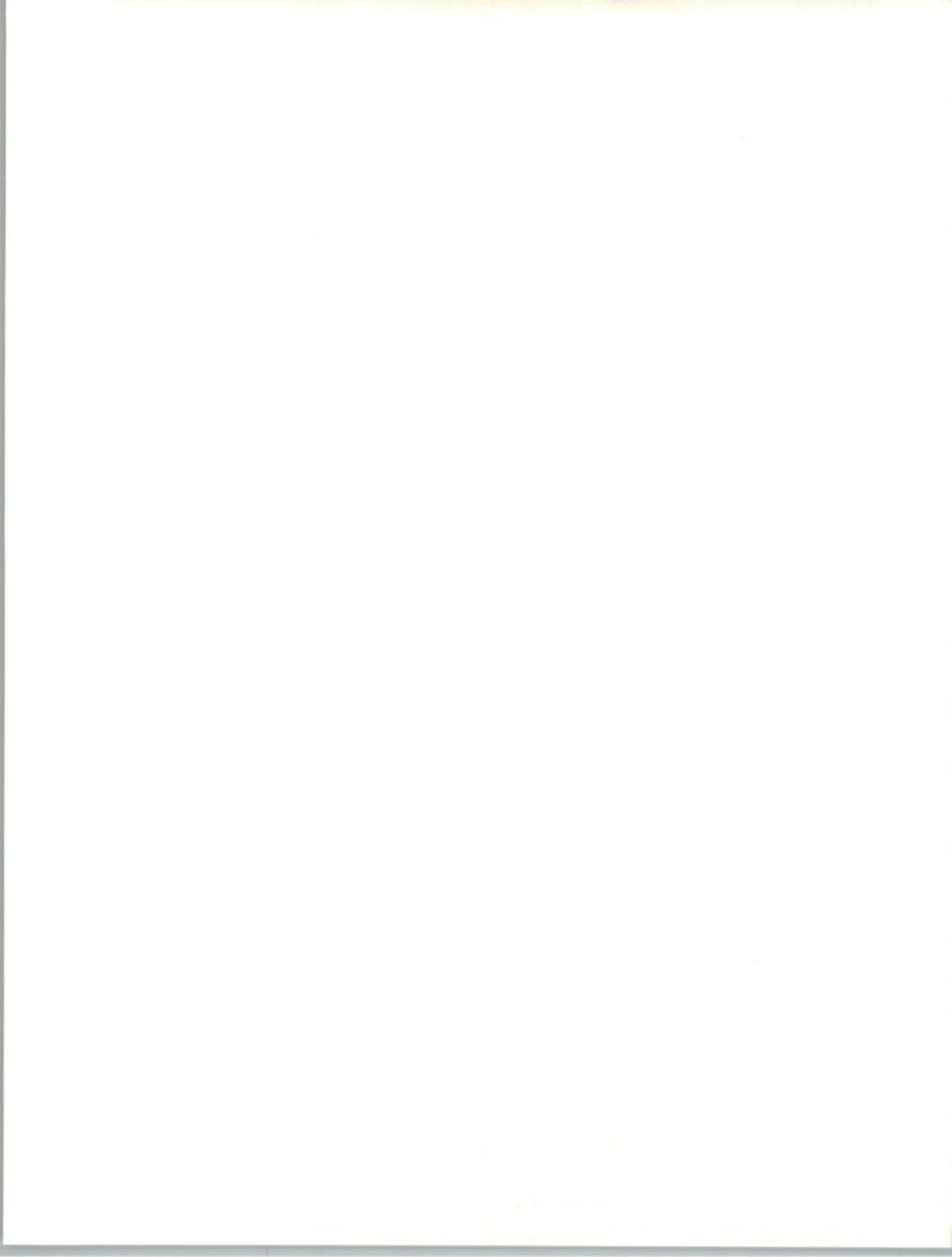
Two reasons for this growth are the increasing use of turnkey systems by automobile dealers for sales applications and the trend toward providing computing power at the retail outlet level.

- Many automobile dealership sales floors are sporting microcomputer-based sales tools.
- These systems can assist salespeople in selling financing and insurance programs by comparing financing and insurance options and costs.
- Potential customers may specify models, options, and colors that they desire while the salesperson checks for availability.

Retailers, from national mass-merchandising chains to small regional chains, are installing systems that provide retail outlet managers with data to manage the store more locally and more effectively.

- These systems range from retail management systems for the back office to microcomputer-based point-of-sale systems for outlets with smaller budgets.
- Some of these systems are replacing electronic cash registers or dumb terminals while other systems are new installations.







Competitive Considerations



III

Competitive Developments

A

Introduction

Some vendors that target the retail distribution market serve retailers in all segments while other vendors cater to the specific needs of selected segments of retail distributors.

- NCR and IBM, the largest vendors in the retail distribution market, can be found in all segments of the industry.
- On the other hand, much smaller vendors are large players in their targeted market because their systems are designed to fill a niche.

The retail management/point-of-sale market is characterized by a few large players and many small vendors.

- The two acknowledged leaders are NCR and IBM. NCR has an edge on point-of-sale front-end systems, while IBM leads in back-office applications.
- Among the larger vendors are Honeywell Information Systems, Sterling Software, Business Computer Systems Group, Smyth Business Systems Inc., Contract Systems, and Data Universal.
- AW Computer Systems, ARM Inc., Xtrasoft, Retail Solutions, and Tracline represent some of the larger vendors of microcomputer-based systems.

Major vendors in the point-of-sale market include hardware vendors that provide POS terminals, electronic cash registers, and other peripherals.

- Among these hardware vendors are Datachecker, Litton, National Semiconductor, Docutel/Olivetti, and Diebold.

The credit card authorization/check guarantee market is characterized by several large national and regional vendors.

- Leaders in the market include Credit Bureau Inc. (Equifax), Associated Credit Bureau (Computer Sciences Corporation), TRW Information Services, Telecredit, and TransUnion.
- Other large vendors include Chilton Corporation, First Data Resources, Comdata Network, Comp-U-Check (now CUC International) and National Bancard Corporation.

The automobile dealership market has a pyramid structure, with the top of the pyramid made up by the automobile manufacturers. The middle level of the pyramid is represented by several large and well-established vendors.

- Electronic Data Processing (a subsidiary of General Motors) and Reynolds and Reynolds have long-term relationships with auto manufacturers.
- Automatic Data Processing and Triad Systems are two large vendors that have served automobile dealerships for a long time.

The base of the pyramid is represented by small and medium-sized vendors.

- Display Data (now Convergent Business Systems) and Dyatron are among the medium-sized vendors.
- Oakleaf Corporation and Coin Financial Systems are two vendors in the market that are growing rapidly.

B

Vendor Profiles

1. Datamap, Inc. (6874 Washington Avenue South, Eden Prairie, MN 55344)

a. Products/Services

Datamap provides computer-generated mapping processing services to assist retailers in identifying prospects within a specified radius of their retail store outlets.

Datamap's proprietary methodology integrates computer graphics to construct honeycomb-like polygons representing mail carrier routes.

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- Datamap can fold census data into any of the 153,000 carrier routes in its Metro databases.
- This ability to zero in on more-uniform smaller units enables marketers to tailor mailings more precisely to their needs.

Computer-generated mapping applications include:

- Site analysis that provides demographic details and analysis of past or potential store volume for a very specific geographic area.
- Customer profiling that provides demographic information on households on specific mail carrier routes.
- Target profiling to identify households that meet the retailer/customers' specific criteria.

Customers may license Datamap's databases on magnetic tape or disks.

b. Markets Served

Datamap serves the retail distribution sector only.

c. Company Strategy

Datamap is committed to reducing the volume of mail that goes through the mail system and raising the response level of mailings.

Datamap will assist retailers in mapping demographics down to the mail carrier level and attempt to eliminate the need for saturation mailings to achieve market penetration.

d. Recent Activities

INPUT estimates that Datamap's fiscal 1987 revenue reached approximately \$800,000, compared to \$500,000 in fiscal 1986.

e. Future Directions

Datamap plans to offer services in a smaller geographical area but will provide more in-depth analyses.

Datamap uses DEC minicomputers to offer its mapping services but acknowledges that vendors are turning to personal computers. Datamap expects that the resolution from PC software must improve before it has an impact on the market.

Datamap has several applications in development, some scheduled for release in 1987.

**2. Electronic Data Systems-Dealer Information Systems Division
(3310 West Big Beaver Road, Troy, MI 48084)**

a. Products/Services

Electronic Data Systems Dealer Information Systems Division (DISD) provides processing services, turnkey systems, and software products to the automotive and automotive retail industries.

DEALERLINE, DISD's trade name for its integrated automobile dealership management information systems, provides for communications between dealership departments as well as with General Motors' Market Support Network.

DEALERLINE consists of several components to meet the information needs of the service, parts, sales, and business departments of a dealership.

- **SERVICELINE** is an on-line modular application software system for automotive service departments.
 - In addition to standard application modules, special features available include Service Order Scheduling, Vehicle Service History, Repair Order Preparation, and Vehicle Search.
 - General Motors-Computerized Automotive Maintenance System (GM-CAMS) Technician's Terminal is a standalone enhancement that assists service technicians in isolating and analyzing problems in GM vehicles.
- **PARTSLINE** is an on-line modular application software system that assists service managers in inventory management of parts.
 - Special features include Real-Time Update, Parts Inventory, Stock Order Calculation, Order Tracking, Multiple Manufacturer Support, and Computer-Generated Counter Invoicing.
 - The RAPID Plus Parts Locator feature enables service departments to find the needed part in the local area when the part is not in stock.
- **SALESLINE** is an on-line sales tool that consists of application software and terminals.

- Primary functions include Customer Profile and F&I Sales Aids; auxiliary sales aids include Fuel Cost Comparisons, Cash Conversion Charts, and Rollback to Payment.
- SALESLINE provides on-line automated credit decisions from General Motors Acceptance Corp (GMAC) and current automobile insurance rate quotations.
- BUSINESSLINE integrates and manages the accounting and payroll functions of individual or multiple-franchise dealerships.
- Dealer Communication Systems—including Warranty Claims, Vehicle Ordering, Delivery Notices, Transportation Claims, Vehicle Locator, and Financial Reporting—are optional modules.

b. Markets Served

DISD's primary market is General Motors franchises and dealerships. GM dealers with multiple lines can use DISD's products for all lines.

DISD will soon expand its market to include all dealerships and the automotive aftermarket industry.

c. Company Strategy

DISD will continue to provide GM dealers with information systems using the latest technologies and will develop new technologies and systems for the future needs of dealerships.

d. Recent Activities

DISD was organized after General Motors acquired Electronic Data Systems in 1984.

EDS' total 1986 revenue reached \$4,379.4 million, a 27% increase over 1985 revenue of \$3,444.7 million. Revenue from GM and subsidiaries (including DISD) reached \$3,195.1 million in 1986, a 32% increase over captive revenue of \$2,428.1 million in 1985.

e. Future Directions

DISD, using innovative technologies, is in the beginning stages of DEALERLINE enhancements that will meet the future needs of dealerships.

- The Electronic Showroom will allow potential buyers to enjoy an interactive video showroom and instantly access accurate product, finance, and service information.

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- Answerline, a computerized answering system, will take incoming service department calls and automatically route them to the appropriate person.
- Electronic Parts Guide, an on-line graphic parts catalog, will keep the parts department up-to-date and stocked with the latest parts.
- EPIC in Motion will be an interactive video system with a touch screen, color monitor, and video output that can serve as a marketing or training tool.
- Satellite Network, a two-way satellite telecommunication, will give dealerships high speed access to GM's dealer network, to strategic marketing and profile data, and to competitive data.
- Information Processing Centers for Mega-Dealers will provide very large dealerships with access to powerful computers and large data bases.

DISD will soon market its systems to all dealerships and to the automotive aftermarket industry.

3. MPSI Systems, Inc. (8282 South Memorial Drive, Tulsa, OK 74133)

a. Products/Services

MPSI provides applications software and interactive, remote batch, and batch processing services for site selection and evaluation of retail outlets. MPSI also provides market area studies associated with its proprietary software.

MPSI's primary offerings are Retail Planning Services, which include MPSI's market area databases and MPSI's primary software product, Retail Planning System.

- Market area data bases include "demand" or demographic data gathered by MPSI from such sources as aerial photography, census, and traffic studies and from tracts, actual house, or outlet counts. Four types of studies are offered:
 - Market Area Studies are used by customers with a large number of retail sites to analyze market conditions and evaluate site locations in metropolitan areas.
 - Single Site Studies are used to evaluate market conditions or the effects of various operating decisions at a specific location.

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- Scheduled Market Area Studies are initiated and scheduled by MPSI and offered to clients on a subscription basis.
- Dynamic Market Area Studies are similar to Scheduled Market Area Studies but are automatically updated 12 months after the original delivery date.
- The Retail Planning System (RPS) uses the market area data bases to construct a mathematical model of a retail market.
- RPS allows users to Forecast the effect changes in the supply or demand variables will have on sales volume.
- The system enables clients to select new sites, identify outlets to divest or rebuild, evaluate price and other competitive strategies, and assess multiple profit centers.

MPSI offers five software products; each uses MPSI's market area data bases.

- Retail Location System identifies and ranks retail location. This system does not provide sales volume projections.
- Market Retail Data Access System is a relational data base system that allows interactive access to information stored in MPSI data bases.
- Income Optimization Model helps gasoline retailers calculate the return on investment through individual outlets and their networks.
- Retail Gasoline Survey is developed for hand-held computers for retail outlet surveys. Data concerning facility image, prices, type of service, and other observable information can be entered on a computerized data form.
- Geographic Information System allows users to request custom-designed data bases from MPSI that are based on geographic coordinates.

b. Markets Served

Prior to 1986, virtually all of MPSI's revenue was derived from the retail petroleum industry.

Since 1986, MPSI's three main target markets have been retail petroleum, retail food, and financial institutions.

c. Company Strategy

MPSI's strategy is to adapt its software for use by various retail industries, including convenience food outlets, supermarkets, restaurants, and financial institutions.

MPSI is also expanding geographically, with 60% of fiscal 1986 revenue derived from outside the U.S., compared to 55% in 1985.

d. Recent Activities

In May 1986 MPSI acquired Retail Systems, Inc. of Minneapolis. Retail Systems provides site evaluations and market studies for the retail food industry.

MPSI's total fiscal 1986 revenue reached \$23.4 million, an 8% increase over fiscal 1985 revenue of \$21.7 million. Net income in fiscal 1986 was \$2.6 million compared to \$1.7 million in fiscal 1985.

INPUT estimates that U.S. information services income in 1986 was approximately \$2 million.

e. Future Directions

MPSI has developed an expert system shell written in C language and has linked it to the Retail Planning System. The system is called the Retail Marketing Advisor.

A new company, MPSI Software Inc., was formed in 1986 to provide knowledge-engineering services and expert systems tools to end users.

MPSI continues to evaluate potential acquisition candidates that will enable MPSI to successfully penetrate targeted retail industries and the retail credit market.

4. Retail Solutions, Inc. (RSI) (1227 Innsbruck Drive, Sunnyvale, CA 94089)

a. Products/Services

Retail Solutions, Inc. (RSI) provides application software products to retailers of hard and soft goods. RSI, an OEM of Wyse Technology's products, also markets terminals, cash registers, and other such peripherals.

RSI's software products are based on the IBM PC/XT and PC/AT. Each product is a retail management system that can control up to eight electronic cash registers and terminals.

The Retailer is designed specifically for general merchandise stores selling hard goods.

- The Retailer can be used in both single-store locations and chains.
- The basic system consisted of four integrated modules, including Retail Data Collection, Inventory Control, Purchasing and Receiving, and Point-of-Sale programs.
- Accounts Receivable, Accounts Payable, and General Ledger packages are also available.
- Optional modules available include Payroll, Order Entry, Open Item Accounts Receivable, Terminal Invoicing, Serial Number Tracking, Multi-Store Communications, and Automatic Purchasing.

The PC Retailer is a less powerful version of The Retailer, supporting only a single store. The PC Retailer also serves as a dumb terminal.

The Apparel Manager is applicable for menswear, ladies' wear, family clothing, and shoe stores.

- The basic system is similar to that of The Retailer.
- Options similar to those of The Retailer are available for The Apparel Manager.

The Apparel Manager II, which can be used in single stores and chains, is currently in development. It is expected to become available in early 1988.

b. Markets Served

RSI serves the retail distribution industry. Most of its customers are independent stores or small chains.

RSI's products are distributed through a large network of dealers in the US and Canada, as well as in Australia, New Zealand, the Caribbean, and the Far East.

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c. Company Strategy

RSI positions itself as a leading supplier of integrated point-of-sale systems for independents and small chain retailers.

RSI will continue to concentrate heavily on the retail distribution market in order to achieve deeper market penetration.

d. Recent Activities

In November 1987 RSI merged with Retail Solutions, Inc. of Canada.

- RSI had planned to make its initial public offering but instead decided to merge with Retail Solutions, Inc. of Canada.
- Retail Solutions, Inc. of Canada, a distributor of RSI products, is a publicly traded company.

INPUT estimates that total revenue for RSI's fiscal year ended September 30, 1987 reached \$4 million. Estimated computer services revenue for calendar 1986 is approximately \$3 million.

e. Future Directions

RSI plans to develop new products and enhancements to keep up with the pace of new technology.

Bar coding and inventorying using bar coding is a technology area that RSI is following.

5. Reynolds & Reynolds Company (800 Germantown Street, P.O. Box 1005, Dayton, OH 45401)

a. Products/Services

Reynolds & Reynolds' Automotive Computer Systems and Services unit provides turnkey systems, processing services, and terminals.

- In January 1987 Reynolds introduced its new ERA series of computer systems for automobile dealerships.
 - The ERA software package improves productivity throughout the dealership, thus allowing information to be shared across all departments and the performance of various functions simultaneously.

- The ERA 96000 is designed for multi-franchise, multi-store or mega-dealers, the ERA 48000 for large dealers, and the ERA 24000 for smaller dealers.
- Reynolds continues to market and support its VIM/NET 5 computer systems that were introduced in early 1986. The VIM/NET 5 series has the largest installed base of computer systems in the auto dealer market.
- The systems provide applications for accounting, payroll, inventory management, invoicing, service merchandising, vehicle merchandising, and leasing functions.
- VIM/NET 5 Model 48000 is targeted to very large dealerships, VIM/NET 5 Model 32000 to large dealerships, and VIM/NET 5 Model 2000 to small dealerships.
- SERVICE/NET, a version of VIM/NET 5 Model 2000 for dealership service departments, provides service merchandising and appointment scheduling applications.
- The integrated Electronic Parts Catalog (EPC) system, introduced in January 1987, allows on-line access to parts information using a part or group number or description.
 - The system includes a laser compact disc reader which retrieves information stored on compact discs provided by Reynolds.
 - EPC operates independently or can be integrated with a VIM/NET or ERA computer system.
- Reynolds markets IBM PC-based systems to automobile dealers:
 - The Dealer Communication System provides a high-speed method of exchanging information with the manufacturer concerning warranty claims, vehicle and parts orders, and delivery schedules.
 - The Service Message Center System can handle incoming service calls informing customers of vehicle repair status, costs, and pick-up times or make outgoing calls for special promotions programs.
 - Reynolds also offers an IBM PC-based system for finance and insurance applications.
- Batch processing and timesharing services available to automobile dealerships include accounting, payroll, and parts inventory control applications.

In December 1985 Reynolds established the Manufacturer Services Group and expanded its turnkey systems business to automobile manufacturers, importers, and distributors.

- Products and services include standalone communications processors, dealer communication systems, interactive video information systems, and centralized data collection systems.
- Reynolds developed the Chrysler Customer Assistance System (CCAS) that allows potential customers to select their "dream cars" using a computer, laser video disc, and touch screen.
- The system allows video "test drives," simulates optional features, and provides warranty, service contract, and comparative information.
- CCAS is currently being released by Chrysler to its dealers.
- Support services, including training and education, hardware installation, maintenance, and software services, are available.

Other members of the Computer Systems Products and Services business segment are:

- Computer Systems Division operating units include an International unit, the Professional Systems Group, and Medical Systems unit.
- Subsidiaries include National Medical Computer Services, Inc., Tax Systems, and Reyna Financial Corporation.

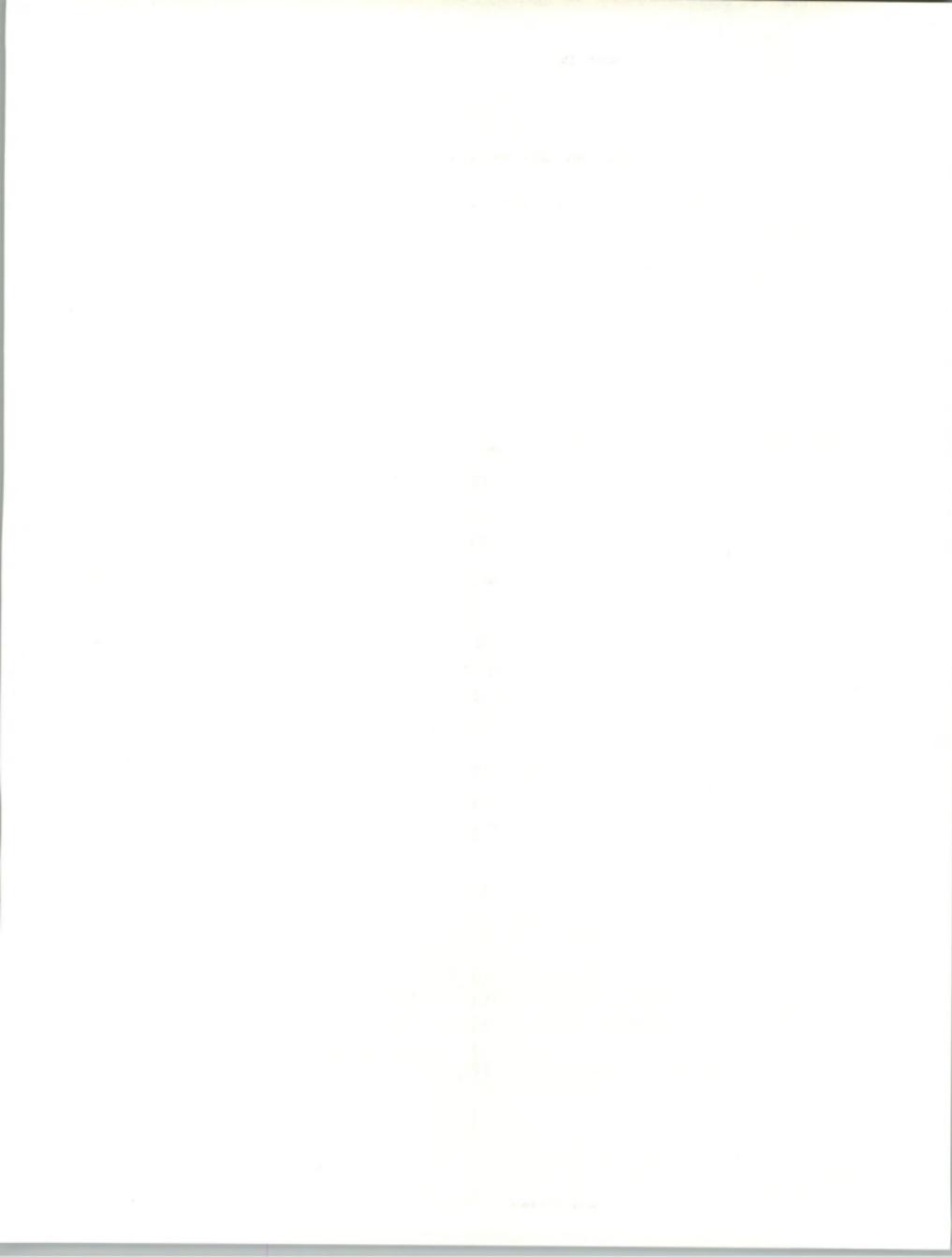
Members of the Business Forms business segment are:

- Business Systems Division operating units include Automotive Forms, Related Automotive Forms, Special Market/Pegboard, and Direct Marketing Division.
- The Arnold Corporation is a wholly owned subsidiary.

b. Markets Served

Reynolds Automotive Computer Systems and Services serves automobile dealerships and automobile manufacturers. Other business units target accountants, medical practices, banks, and other industries.

The company continues to support automobile manufacturers; manufacturers take a more active role as the customer level grows.



c. Company Strategy

Reynolds emphasizes development of systems to meet the future needs of automobile dealers and manufacturers and is working to bridge the gap between today's environment and future needs.

d. Recent Activities

In January 1987 Reynolds introduced several product enhancements and new products, including ERA, a line of computer systems for automobile dealerships.

Total fiscal 1986 revenue reached \$404 million, a 24% increase over fiscal 1985 revenue of \$325.3 million. Net income was \$23.9 million, a 13% increase over \$21.1 million in fiscal 1985.

- Computer Systems fiscal 1986 revenue was \$201.9 million, a 7% increase over fiscal 1985 revenue of \$188.6 million.
- INPUT estimates that approximately \$115 million was derived from the retail distribution sector in 1986.

In January 1986 Reynolds International completed its acquisition of Dyatron's Australian automotive computer subsidiary.

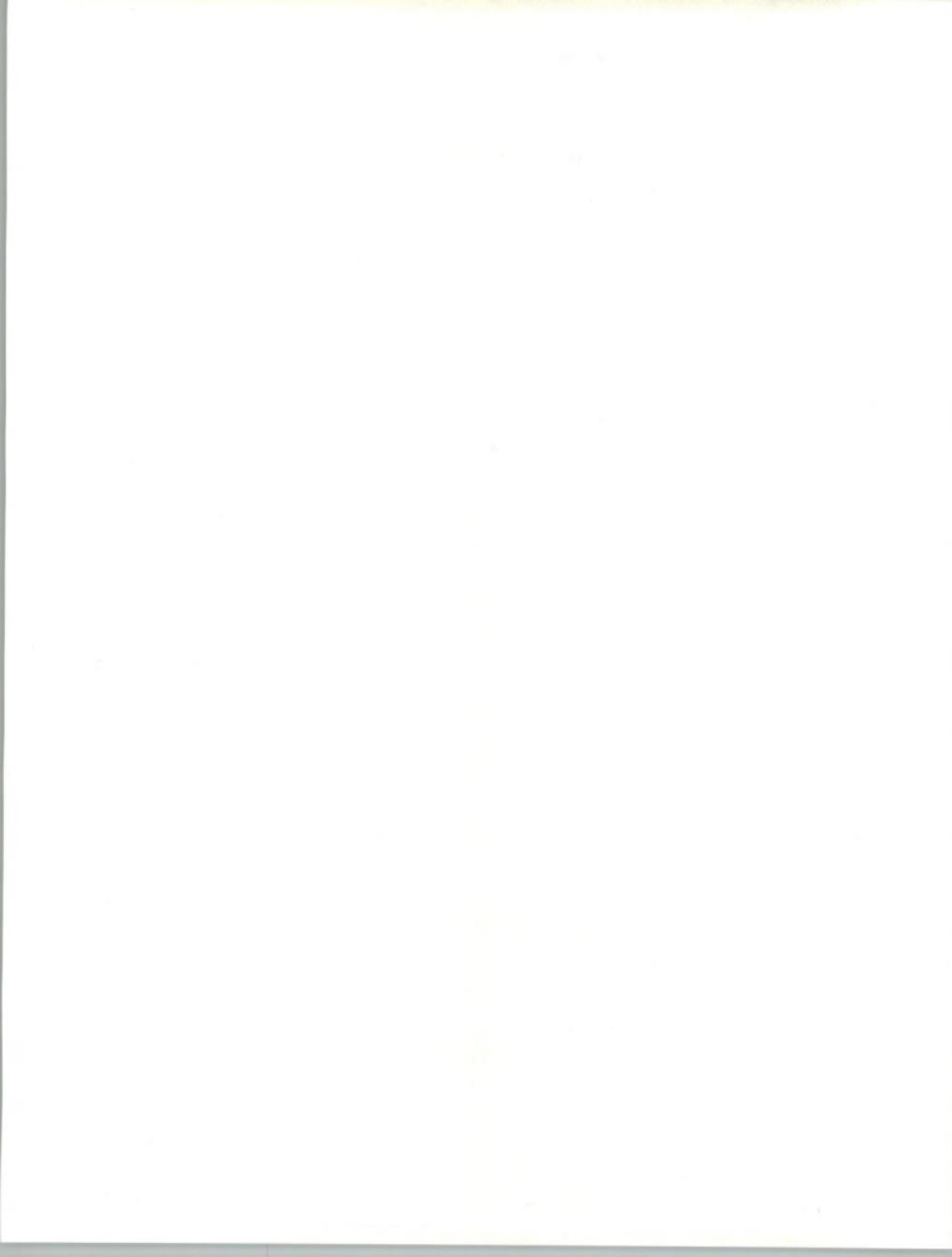
e. Future Directions

Reynolds plans to continue its strategy to expand its automotive computer business by anticipating the future system needs of automotive dealers and working with automobile manufacturers.

Reynolds will continue to address new technologies, including interactive video technology, artificial intelligence, and advanced communications.

6. TRW Information Services (505 City Parkway West, Orange, CA 92668)**a. Products/Services**

TRW Information Services Division (ISD) consists of three business segments: TRW Credit Data, TRW Business Credit Services, and TRW Direct Marketing Services.



TRW Credit Data is one of the largest vendors of on-line consumer credit information, with over 133 million consumers on file and 25,000 subscribers at 42,000 locations.

- Subscribers have access to the consumer credit data base which is the basis of the TRW Updated Credit Profile.
 - The Profile includes information about retail credit and bank charge accounts, lines of credit, secured loans, and finance company accounts.
 - Selected public record information limited to tax liens, judgements, and bankruptcies is also available.
 - Payment history for the past 12 months is listed and all requests for Profile information are recorded and retained for one year.
- Asset Control Techniques provide consumer credit managers with three account-monitoring methods. Credit Profiles are produced on selected accounts, using criteria defined by the subscriber.
 - Quest periodically reviews the subscriber's customer accounts, allowing payment trends to be determined.
 - Alert produces a management summary of accounts with unfavorable payment conditions as reported by other credit grantors.
 - Signal reviews potential problem accounts as reported by other credit grantors.

The Business Credit data base maintains objective trade payment and financial information on more than 11 million business locations. Nearly 8,000 companies contribute automated and manual accounts receivable information to the file.

- Profile Reports include the following information:
 - Trade Line Industry Profile, Composite Industry Profile, Six-Month Payment Trend, Quarterly Credit Pattern, and Current Payment Guide.
 - Name and location of the company's bank.
 - Summary Business Data on over 360,000 U.S. businesses with 20 or more employees.

- Business and Financial Data based on information provided by Standard and Poor's Corporation.
- Asset Control Techniques are available to companies contributing accounts receivable information to Business Credit.
- Business Payment Index is published quarterly, using contributing companies' information on the percentage of dollars owed by their domestic customers in current and past-due categories.

Direct Marketing Services uses the TRW consumer credit data base and/or the TRW commercial credit data base to provide subscribers with marketing information formatted according to specific criteria for a variety of marketing-related uses.

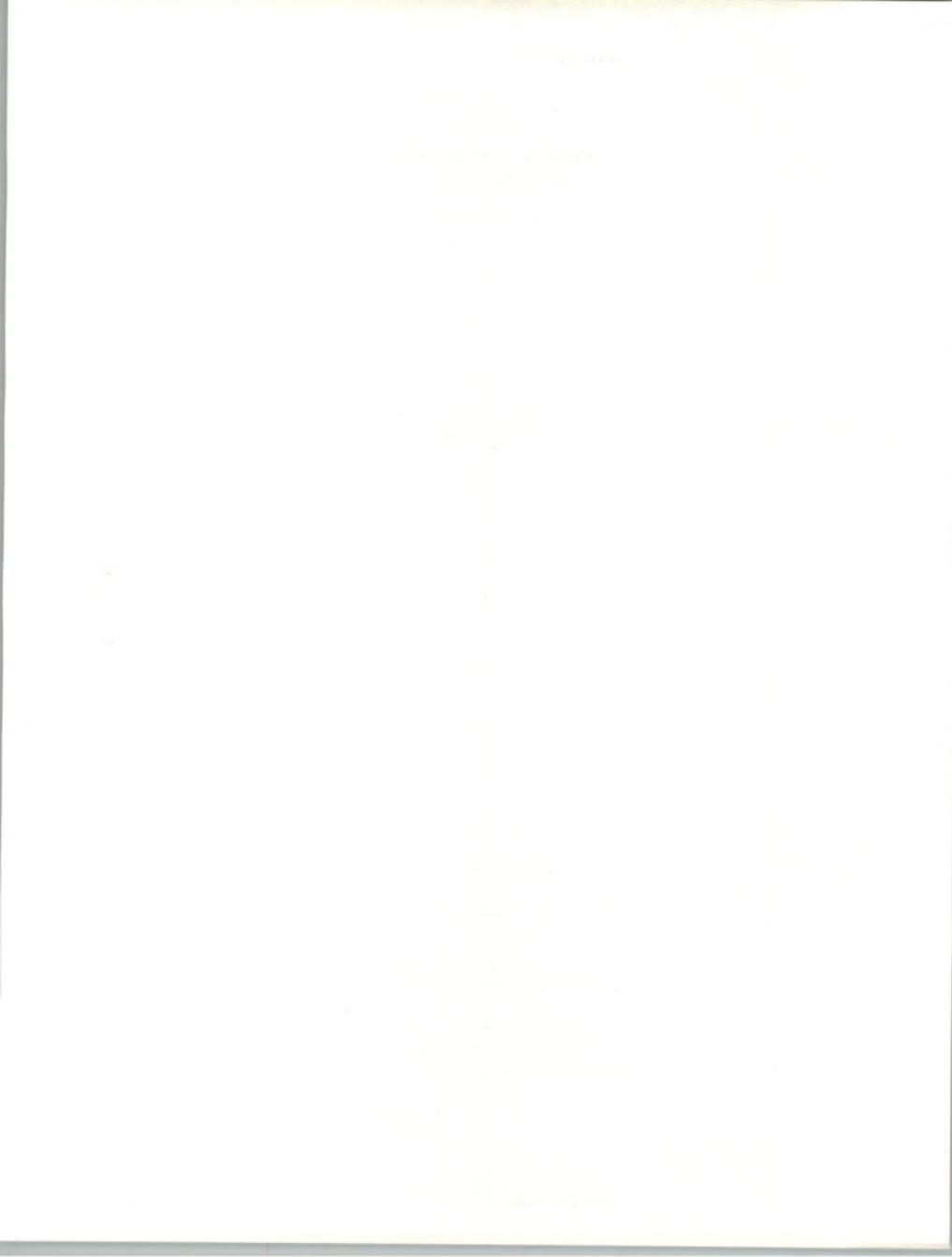
- The TRW Prescreen service uses subscriber-selected credit criteria to prequalify an existing list of potential customers. The TRW File Extract service is also available for prescreen programs.
- The TRW Quest service periodically evaluates existing accounts based on the subscriber's criteria and provides a TRW Updated Credit Profile report whenever the evaluation criteria is met.
- The TRW SuperMarkets service generates a series of marketing information reports that profile a subscriber's market share as compared to its industry.
- The TRW Address Verification service allows companies to verify a customer's billing address and the credit card account number before shipping merchandise.
- The TRW Address Update service can be used by many organizations to update a mailing list.

b. Market Served

TRW ISD customers are primarily in the retail, banking, and financial industries.

c. Company Strategy

TRW is changing its business mix to focus on its most promising businesses. TRW expects that information systems will be one of the major sources of growth.



IDS, which continues to be a leader in its market, has expanded its network to cover consumers in all 50 states.

New services are being developed or offered in order to leverage the information in the TRW consumer credit data base and the TRW commercial data base and to expand market opportunities.

- TRW Direct Marketing Services was formed in 1986.
- TRW Credentials, marketed directly to consumers, provides subscribing consumers with their TRW Updated Credit Profile reports, a simplified credit application process, and security measures for their credit files and credit cards.

d. Recent Activities

INPUT estimates ISD's 1986 revenue at \$125 million, a 14% increase over estimated 1985 revenue of \$110 million.

INPUT estimates that revenue from the retail distribution industry represents approximately 20% to 25% of ISD's total revenue.

7. Telecredit, Inc. (1901 Avenue of the Stars, Los Angeles, CA 90067)

a. Products/Services

Telecredit provides payment processing services through a national on-line telecommunications network and computerized data bases.

- Authorization of check, credit card, and debit card transaction is available to customers either by telephone, point-of-sale terminals, or electronic cash registers.
- The authorization network currently supports a variety of electronic terminals at the point of sale, with more than 25,000 terminals linked to Telecredit.
- More than 85% of authorization transactions are delivered through electronic terminals, with the balance derived from voice inquiries made through toll-free telephone lines to Telecredit's authorization operators.
- More than 140 million check, credit, and debit card transactions are processed annually.

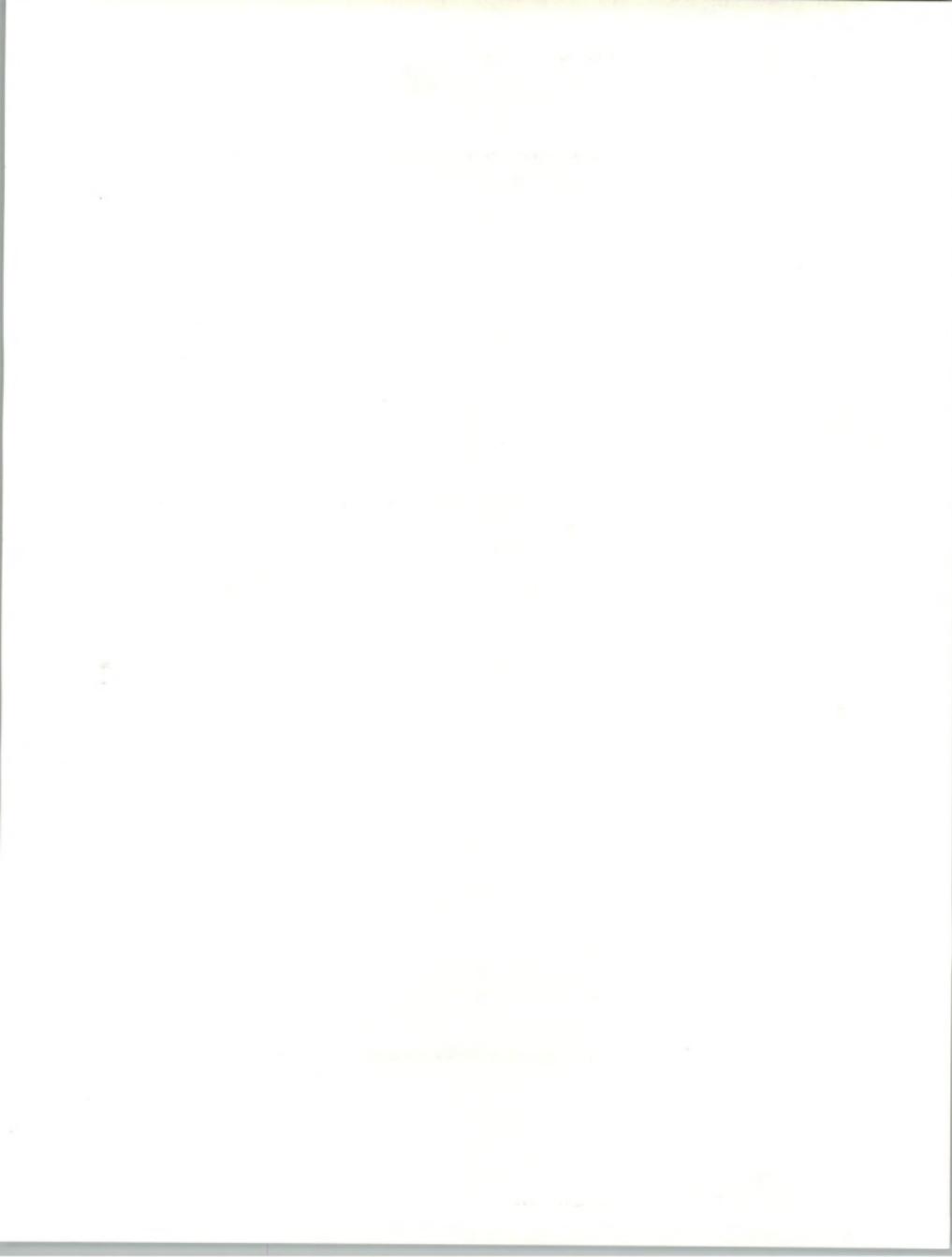
Telecredit's check authorization services use a data base developed from information provided by its subscribers. The information, indexed by driver's license numbers, includes check-cashing histories and is used in making check authorization decisions.

- The Basic Service to merchant subscribers is provided directly to national, regional, and local merchants. Check purchase is currently the most significant of the authorization services offered.
- Check authorization services are also provided by Telecredit through point-of-sale terminal programs sponsored by banks and other financial institutions and associations.
 - Telecredit contracts with institutions to make its data base available and to provide the support necessary for the institution to offer check authorization services to their merchant depositors.
 - Each institution is responsible for installing, operating, and maintaining its system. Queries go to the Telecredit data base without operator intervention.
 - Other Telecredit services include returned dishonored check claims processing, telephone backup, computer operations assistances, consumer inquiry support, and Fair Credit Act reporting.
- The Check/Management Information Service (C/MIS) provides subscribers with management information reports that analyze the efficiency and impact of electronic delivery of check authorization services at point of sale.

Honest Face is a proprietary card-based check authorization service that provides consumers with ready check acceptance at Atlanta-area grocery and other retail stores.

Telecredit provides credit and debit card processing services in connection with MasterCard, VISA, and American Express transactions. These services are provided to small- to medium-sized financial institutions that issue credit and debit cards and to merchants that accept credit and debit cards.

- Telecredit provides card issuer processing services, including embossing cards, posting and settling cardholder transactions, receiving and processing payments on cardholder accounts, preparing monthly statements to cardholders, providing cardholder security, and maintaining a customer service department.



- DCAPS, a proprietary distributed card processing system for IBM and compatible microcomputers, permits card issuers to interface with Telecredit's data center for customer inquiries, input new cardholder accounts, increase card limits, and make other changes to cardholder accounts.
- Telecredit processes credit card paper for depository financial institutions that process transactions for merchant customers and for some merchants on a direct basis. Services provided include authorization, clearing, and settlement.

b. Markets Served

Telecredit primarily serves the retail distribution industry. Telecredit also serves the banking, services, and other vertical market sectors.

Clients include retail merchants, financial institutions, credit unions, automobile dealers, supermarkets, hospitals, hotels, motels, airlines, and car rental companies.

While Telecredit has customers across the U.S., the heaviest concentration of clients is in California and Florida.

c. Company strategy

Telecredit continues to invest in upgrading computer, telecommunications, and processing capabilities with the intent to use new technology as a means of providing customers with the best possible service.

d. Recent Activities

In September 1986 Telecredit sold the assets of its Honest Face check purchase service to Computers Plus, Inc. for approximately \$1.9 million.

Total revenue for fiscal 1987 reached \$124.9 million, a 22% increase over fiscal 1986 revenue of \$102.3 million. Payment services revenue increased 22% from 95.4 million in fiscal 1986 to \$116 million in fiscal 1987.

e. Future Directions

Telecredit will continue to develop relationships with small-to medium-sized financial institutions and associations.

- As of April 1987, Telecredit had contracts with 700 members of Payment Systems for Credit Unions and with 168 Independent Bankers Association of America members.

- Telecredit also signed a five-year agreement with U.S. League Financial Services, Inc., an affiliate of the U.S. League of Savings Institutions.

Telecredit will continue to emphasize service delivery through electronic cash registers and point-of-sale terminals in the check services area.

8. 3PM, Inc. (30881 Schoolcraft, Livonia, MI 48150)

a. Products/Services

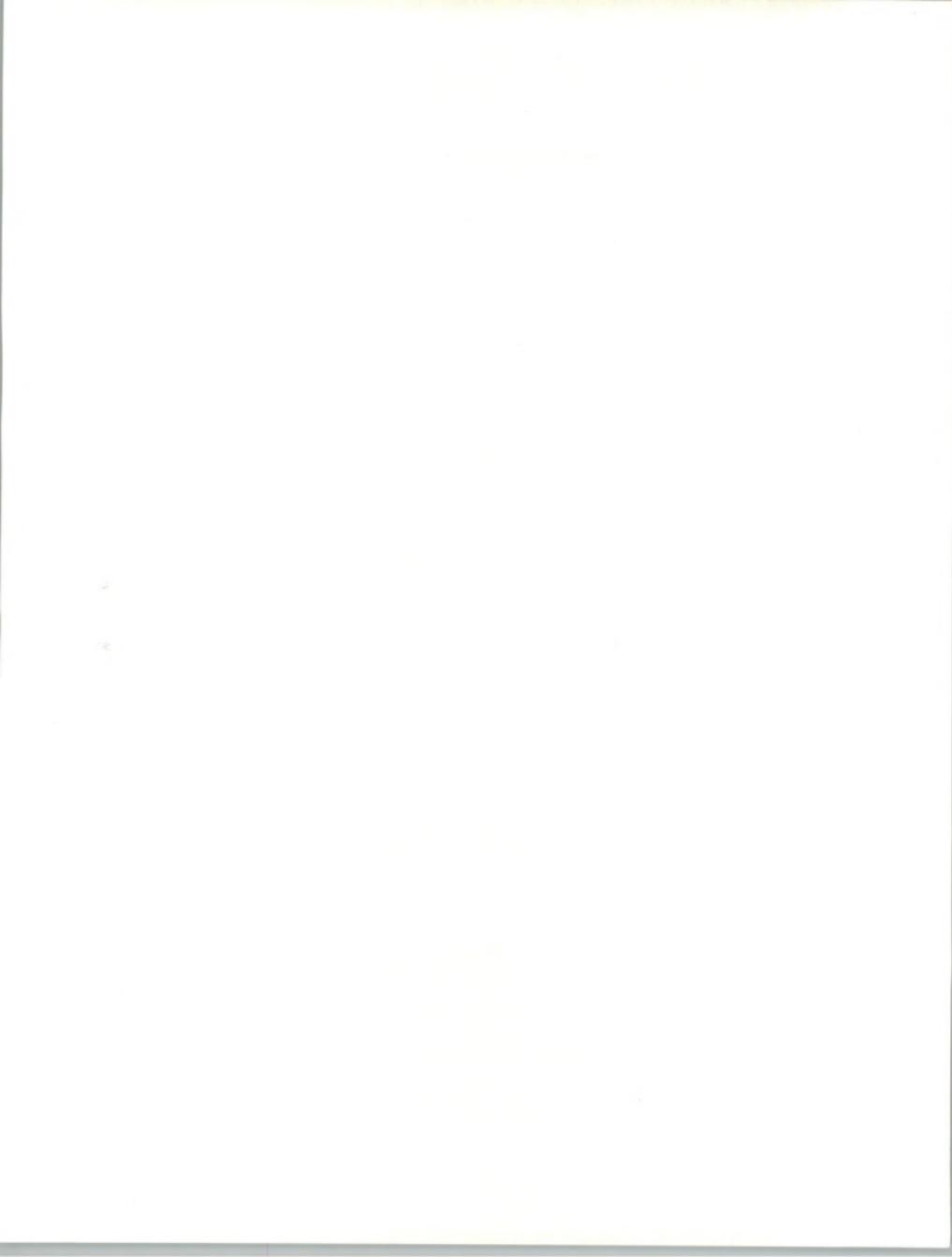
3PM, a division of the McKesson Corporation, consists of two divisions, Pharmaserv Division and Floral Computer Division.

Pharmaserv Division provides turnkey systems, software, and processing services to retail pharmacies.

3PM offers a range of turnkey systems to meet the needs of small pharmacies and of large, multi-outlet pharmacies.

- Pharmaserv systems are based on hardware from IBM, DEC, and other manufacturers. Systems allow upward compatibility for more capacity and/or larger systems as needed.
 - The Pharmaserv Computer System with IBM PC AT will fit most pharmacy operations.
 - The Pharmaserv "Aten" System (custom-configured hardware) provides multi-terminal and multi-tasking functionality.
 - The Pharmaserv Micro/PDP-11 System provides full multi-terminal, multi-functional, and multi-store capabilities.
- Software features include patient registration, prescription editing and update, patient profile updating, special-use instructions on labels, indexing of drug-to-drug interactions, and more.
 - Automatic weekly price updates are provided by 3PM.
 - Other features include on-line entry, accounts receivable, and mailing labels.
 - Special features include third-party claims, prescription pricing, system checks for third-party eligibility, and management reports. Nursing home functions are available for larger turnkey systems.

The Pharmaserv division provides on-line and batch processing services as well as support services such as data entry.



- On-line system features include automated tape-to-tape third-party billing, automatic price updates and prescription pricing, drug interaction and allergy checks, and maintenance and update of patient medication profiles.
 - Customers also receive weekly and monthly drug movement reports, sales and gross profit reports, and electronic mail.

Floral Computer Division provides software products, hardware systems, and miscellaneous peripheral devices primarily to FTD florists. FTD members use the Mercury Network which provides the basic ability to send and receive orders and messages.

3PM combines DEC hardware and peripherals with 3PM proprietary software, and markets the systems under the trade name of Mercury Plus.

- A Mercury Plus system can run Mercury Network and accounting functions concurrently. The system alerts the user that an order is coming in; the user can interrupt to receive the order immediately or store it for later attention.
- Software products available for Mercury Plus systems include the following:
 - Mercury software for the basic sending and receiving of orders and messages.
 - Floraserv accounts receivable and billing system with customer master file maintenance, customer account inquiry, sales and payments entry and editing, wire service reports, month-end functions, and additional special functions.
 - Additional software systems available are Basic Billing, Accounts Payable, Payroll and Personnel, Sales Order Entry/Inventory, and General Ledger.
- 3PM currently offers 5 Mercury Plus systems, each with different configurations of DEC CPUs, disk and or tape drives, printers and screens.
 - System I is for small floral shops to receive and send Mercury orders quickly and efficiently.
 - System II is designed for medium-sized shops with the majority of accounting functions handled in-house.
 - System III users are shops with 4,000 to 12,000 accounts.

- System IV handles shops with up to 35,000 accounts.
- System V is for shops using in-house computers that wish to tie into the Mercury Network while enjoying the added speed and efficiency of Mercury Plus.

b. Markets Served

3PM serves the retail pharmacy and florist industries.

c. Company Strategy

3PM positions itself as a company that offers a range of computer solutions to meet the long term needs of the pharmacy industry. Some of the systems designers employed by the Pharmaserv division are also pharmacists.

Currently 3PM is the exclusive distributor of Mercury Plus systems. 3PM does face competition from companies with software designed to be compatible with Mercury Plus.

3PM is one of the largest authorized distributors of DEC equipment in the US.

d. Recent Activities

INPUT estimates that total revenue for the 1986 calendar year reached \$35 million. Computer services revenue is estimated by INPUT at \$20 million.

9. World Wide Chain Store Systems Ltd. (One East Wacker Drive, 26th floor, Chicago, IL 60601)

a. Products/Services

Worldwide Chain Store Systems Ltd. (WCSS) provides application software products and associated support services for IBM mainframes and microcomputers to the distribution industry.

WCSS application software products for distributors are available for IBM 43, 30, and compatible mainframes running under DOS or MVS.

Current product offerings include the following:

- The On-Line Warehouse Management System is used to control the day-to-day distribution of merchandise. Functions of the system include receiving, slot allocation control, schedule replenishment, material control, physical inventory, and outside storage.

- The On-Line Purchasing/Investment Buying System allows users to reduce inventory while maintaining specified service levels and increase gross margins through strategic buy-ins. Subsystems are provided for forecasting, deals and promotion allowances, suggested vendor orders, investment buying, performance reporting, and data base management.
- The On-Line Labor Management System is used to measure labor productivity in the warehouse. The system includes labor scheduling, performance monitoring, and management reporting.
- The On-Line Store Order Management System handles orders and their processing through the entire billing process. The system provides interface with let-down functions, automated invoice printing, generation of packing lists and labels, and management reporting.

In 1986 WCSS introduced retail systems for IBM PC/XT and AT micro-computers.

- The Scheduling, Time, and Attendance Reporting (STAR) system is used for labor scheduling, and monitoring and controlling of manpower resources.
- WCSS markets other systems that integrate with STAR. These include Communications, Electronic Mail, Direct and Store Delivery developed by TCI of Santa Ana (CA), and Personnel Scheduling developed by Management Robotics of Boulder.

b. Markets Served

WCSS serves retail and wholesale distributors.

Mainframe software customers generally have annual revenue of \$350 million or more.

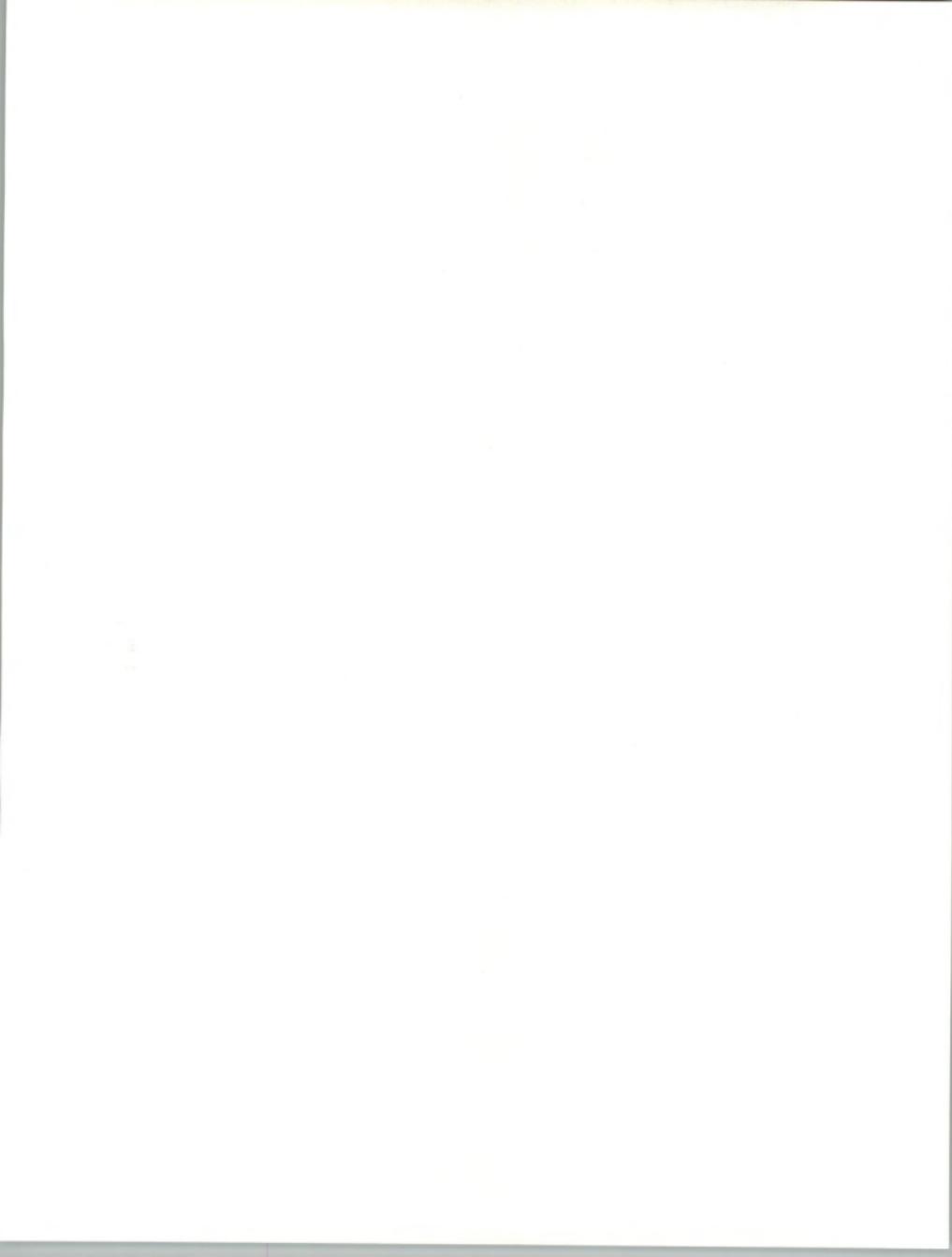
c. Recent Activities

INPUT estimates that 1986 revenue reached \$7 million and that approximately \$4 million was derived from the retail distribution industry.





Information Systems Department



IV

Information Systems Department

A

Driving Forces

Profit margins in the retail industry are low – typically 2-3% – so pressure to improve efficiency is strong.

Minimizing inventory and providing the best possible customer service are the keys to maximizing profits in retail.

Retail is always the first industry sector to be affected by cyclical changes in the economy and is also the most profoundly affected sector. It is particularly important, therefore, that managers in this sector monitor changes in the economy and consumer spending and keep tight controls on costs.

Computer applications in the retail and wholesale sectors are becoming more interdependent as technology advances. Inventory control applications make use of the results of sales forecasting applications to help schedule replenishments. In turn, forecasting applications utilize data collected at the point of sale.

Competition is the fundamental driving force behind all other driving forces. Automation has become a necessity for survival as retailers use automation to continually improve service and efficiency. When asked how technology is used to give his company a competitive advantage, one survey respondent answered: "It isn't – it's just helping us maintain our current position." Technology is moving rapidly in this sector, and IS departments are racing to keep up.

Exhibit IV-1 summarizes the driving forces for the retail distribution sector.

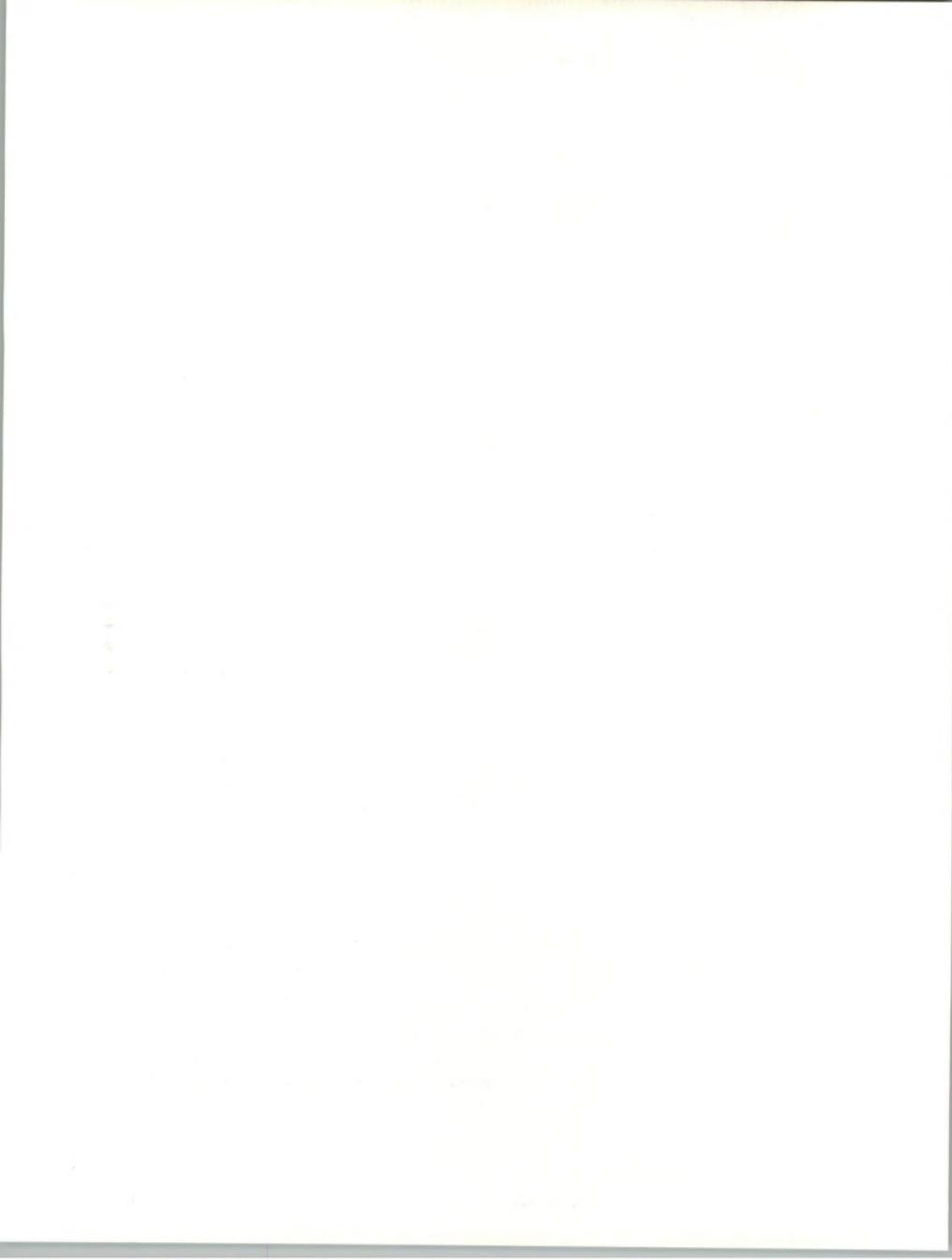


EXHIBIT IV-1

**RETAIL
DRIVING FORCES**

- Low Profit Margins
- Economic Pressures
- Technology Trends
- Competitive Pressures

B**Issues and Objectives**

Retailers depend on communication with their distributors. Traditionally, order processing has relied on paperwork, but electronic data interchange (EDI) and electronic mail are quickly gaining favor. EDI is used in retail primarily for order entry directly to distributors' computers, thus reducing paperwork and avoiding redundant data entry.

Compatibility and standards are major issues in retail because of the interdependence of retail systems and distribution systems and because of the importance of communications to this sector.

- Computers for analysis and forecasting should connect with computers for inventory control, and, ideally, both should connect with point-of-sale (POS) terminals.
- EDI is still a young technology and absolute standards have not been set. Although it is already useful, its ability to facilitate order processing and improve efficiency will increase when and if standards are developed.

A related issue is that of software integration. Connectable computers cannot provide maximum efficiency unless the software on one node can communicate with software on others. In order to avoid duplicating data entry, it is important that data collected for one purpose can be used for



other purposes. IS managers are confronting this issue early in the implementation of automation for retail because so many applications in this sector rely on data from a single source – point of sale.

IS managers are distributing processing power to end users at individual retail sites. This will give store managers more autonomy and will enable them to adapt to local markets.

A number of survey respondents noted a lack of qualified software development personnel as a major hurdle in pursuing IS goals. Applications for retail are improving rapidly, and competitive considerations make it imperative for IS departments to keep up. Since most large retailers prefer to develop applications in-house rather than buying packaged software, this personnel shortage presents a challenge to IS managers.

Exhibit IV-2 summarizes the primary issues and objectives to be addressed by survey respondents.

EXHIBIT IV-2**RETAIL
ISSUES AND OBJECTIVES**

- Implementation of EDI
- Integration and Connectivity
- Shortage of Qualified Applications Development Personnel

C

Impact of Technology

Point-of-sale (POS) technology is the most obvious recent development in retail automation. Point-of-sale systems simplify the payment process both by simplifying the cashier's job and by offering consumers a number of ways to pay.

Retail grocery stores are the leaders in implementation of automation. There are three ways automation improves customer service at the grocery checkout line.

- Laser scanning bypasses the process of keying prices into a cash register one at a time. Scanning involves only passing items over a scanner which reads bar codes printed on labels. This automatically enters the proper prices and inventory information into the cash register.
- Electronic funds transfer (EFT) machines have begun to appear in grocery stores and gas stations. These machines allow consumers to transfer money directly from their checking accounts to stores' account using their bank ATM cards.
- Check approval machines reduce the time customers spend in checkout lines by automatically approving checks before shopping. The decision whether or not to approve the check is based on matching a personal identification number (PIN) with credit records stored in a central computer.

Distributed computing power improves customer service and provides greater autonomy to store managers.

- With computers located on the premises, each of a chain's locations can operate almost as an independent store. Payroll, staff scheduling, and time card applications can all reside on local computers.
- Marketing personnel in individual stores have a better feel for how to address local markets than do regional or corporate marketing departments. Allowing individual store marketing departments to analyze their own sales data enables them to develop strategies aimed at specific local markets.

EDI drastically reduces paperwork involved with order processing. Traditional order processing methods involve as many as 17 separate forms, each of which represents handling costs and opportunities for the introduction of human error. Order processing using EDI transfers the forms electronically.

Advancing software technology yields more-efficient programs by having a number of applications draw data from a single data base and by

storing only one version of procedures that are used many times in different contexts.

Exhibit IV-3 summarizes the impact of four areas of technology on the retail sector.

EXHIBIT IV-3

RETAIL IMPACT OF TECHNOLOGY

TECHNOLOGY	COMMENTS
POS	Effective for Data Capture
Distributed Systems	Allows Localized Marketing Strategies
EDI	Streamlines Order Processing
Software Integration	Makes More Efficient Use of Data

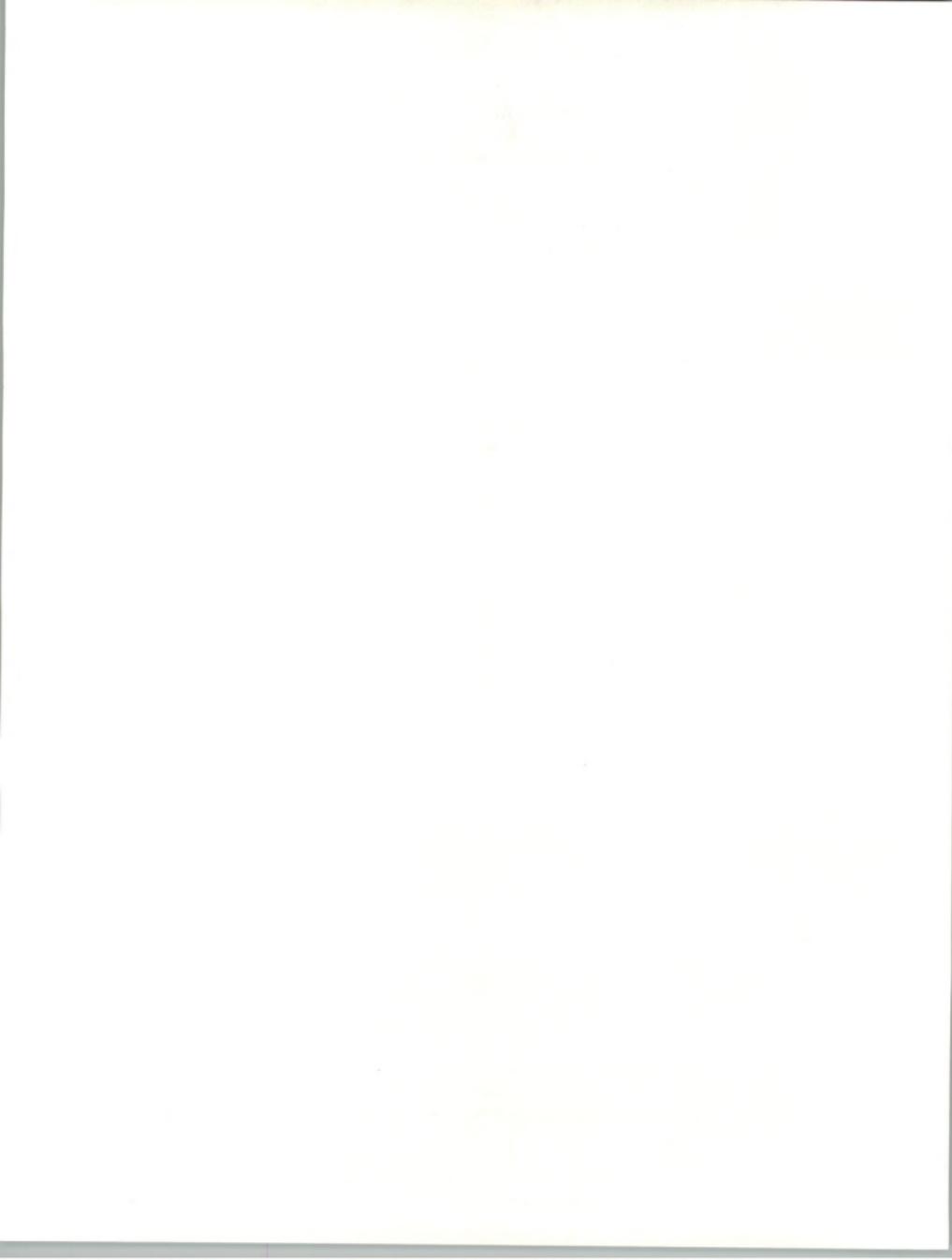
D

Budget Analysis

IS budget growth in 1987 will be essentially flat in every category. IS managers report no change in overall IS budgets, with no category varying more than 6% from zero growth. This is consistent with IS budgets in all industries, though a bit lower than average.

The area of greatest growth is communications at 6%. This shows, once again, the importance of communications to this sector. Retailers will be allocating more resources to EDI and networking as the technology develops and as the benefits of these forms of communication become apparent.

Personnel expenditures will see slight growth in 1987, reflecting the shortage of qualified IS personnel (as discussed in Issues and Objectives)



and the increasing sophistication of computer systems.

"Salaries and fringes" captures the largest share of IS expenditures overall - 41.8% - followed by "total hardware" with 24.3%, a surprisingly large "other" category including forms, disks, miscellaneous supplies, and any items not included in standard budget categories.

Approximately one-third of survey respondents indicated their budgets will increase in 1987, one-third expect a decrease, and another third expect the IS budget to be the same in 1987 as in 1986.

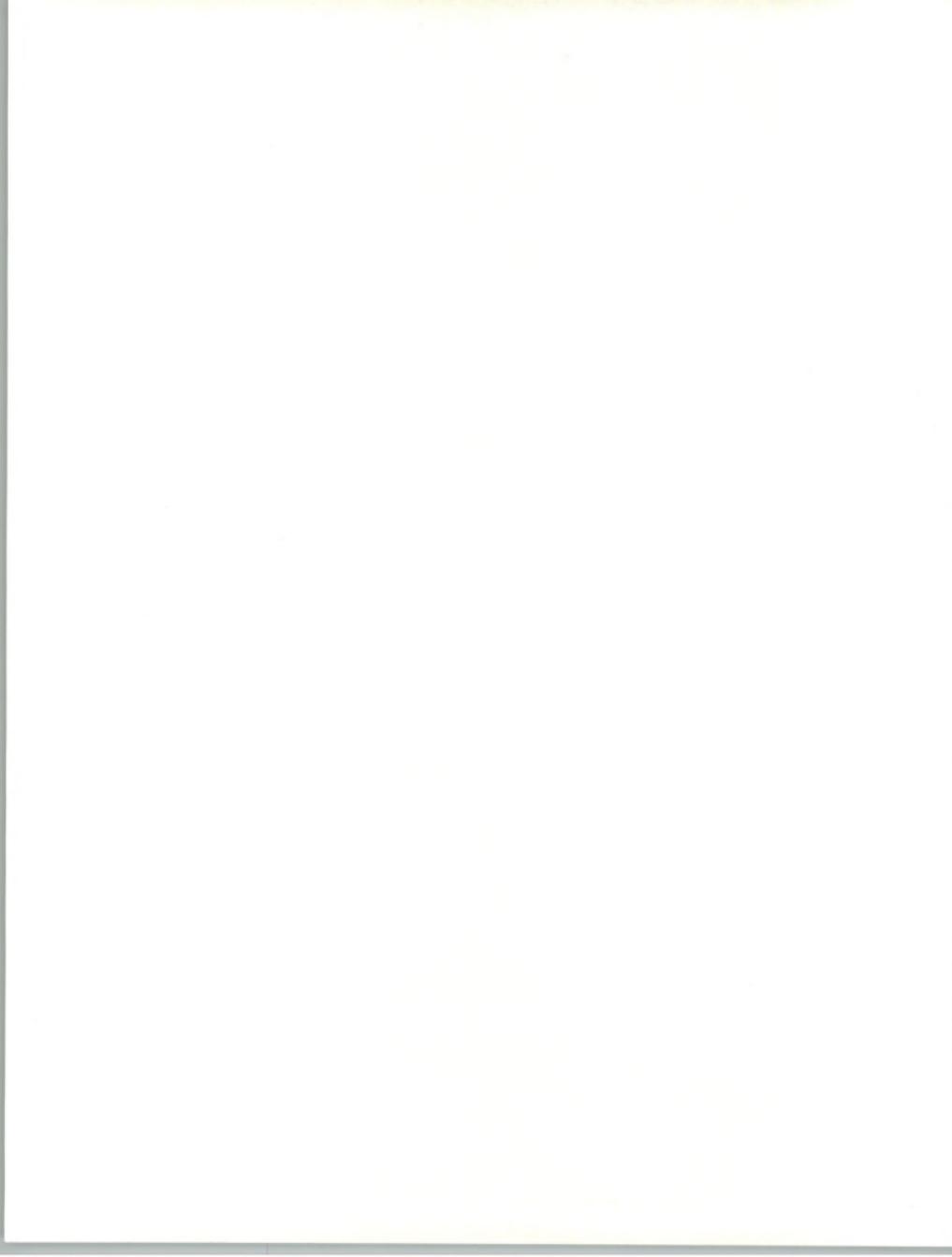
Exhibit IV-4 shows the 1986 budget distribution and projects growth of budget categories in 1987.

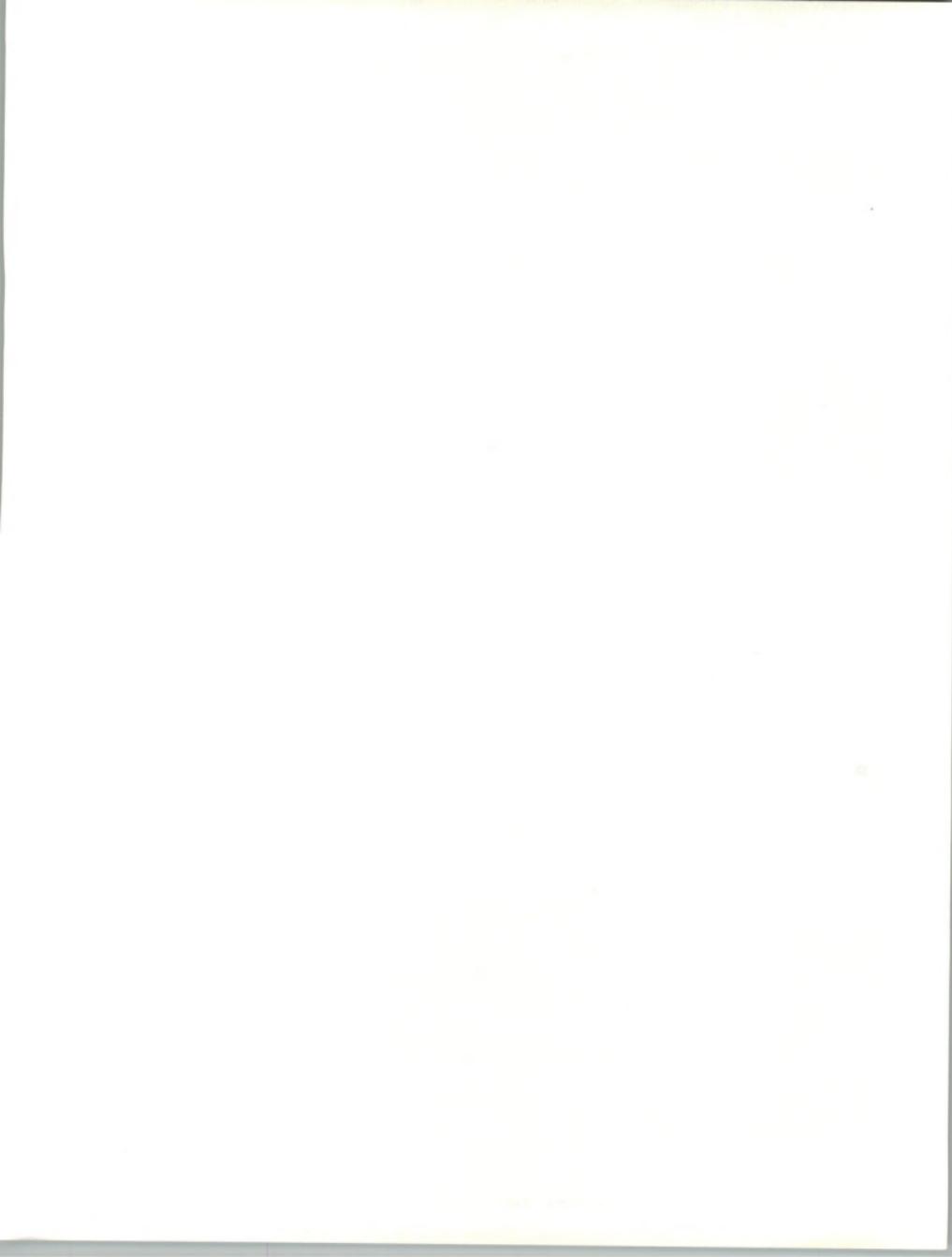


EXHIBIT IV-4

**1986 BUDGET DISTRIBUTION AND
1986/1987 CHANGES IN THE
RETAIL DISTRIBUTION SECTOR**

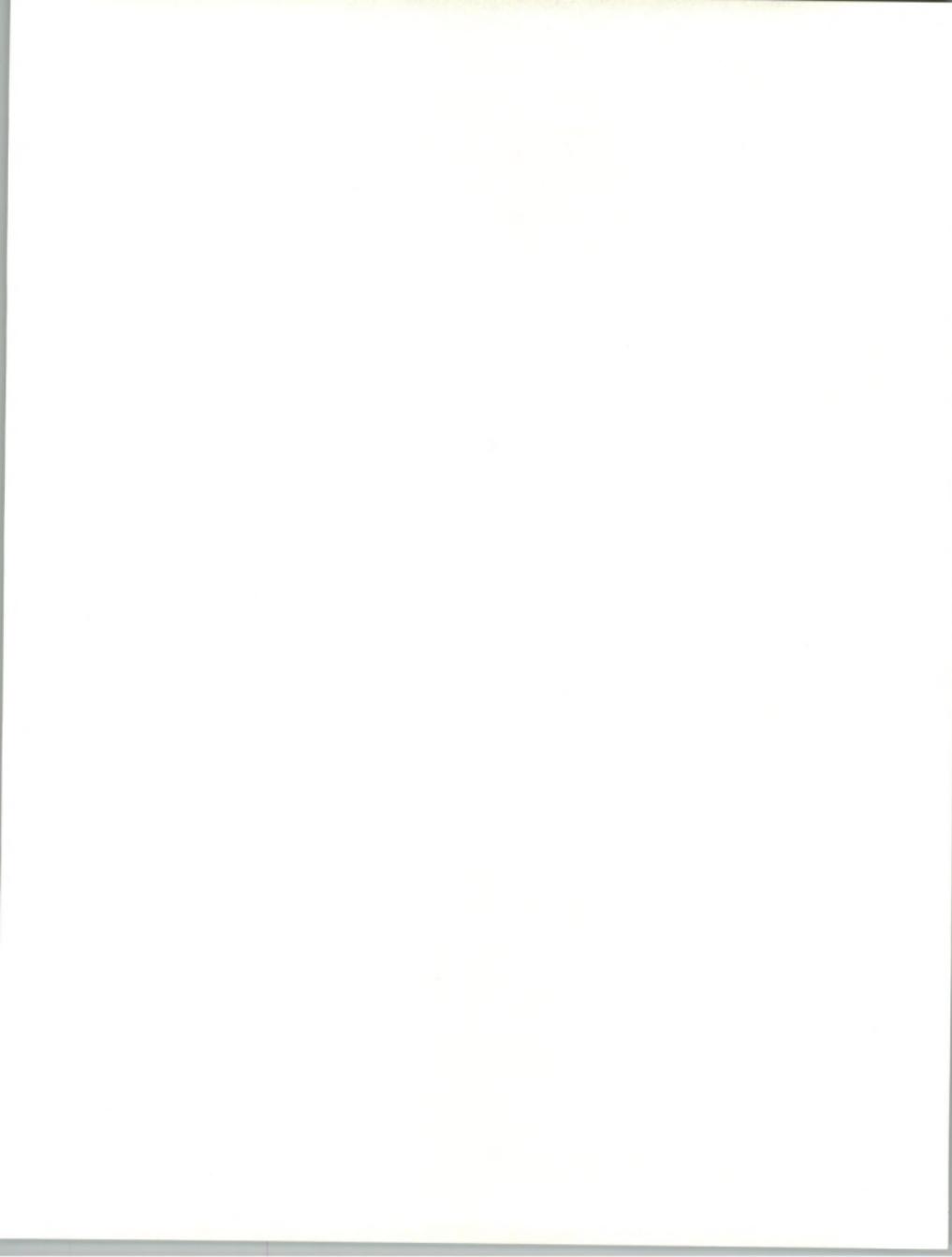
BUDGET CATEGORY	1986 PERCENT OF I.S. BUDGET	1986-1987 EXPECTED BUDGET GROWTH
Personnel Salaries and Fringes	41.8	1.1
Mainframe Processors	12.2	(1.5)
Minicomputers	1.2	(2)
Microcomputers	8.8	(1)
Mass Storage Devices	1.5	(2)
Other Hardware	.6	(2)
Total Hardware	24.3	(2.5)
Data Communications	12.9	6
External Software	6.1	(1.4)
Professional Services	1.0	(2.5)
Software Maintenance	3.2	0
Hardware Maintenance	5.8	0
Other	4.9	(1)
Total	100.0	0







New Opportunities



V

New Opportunities

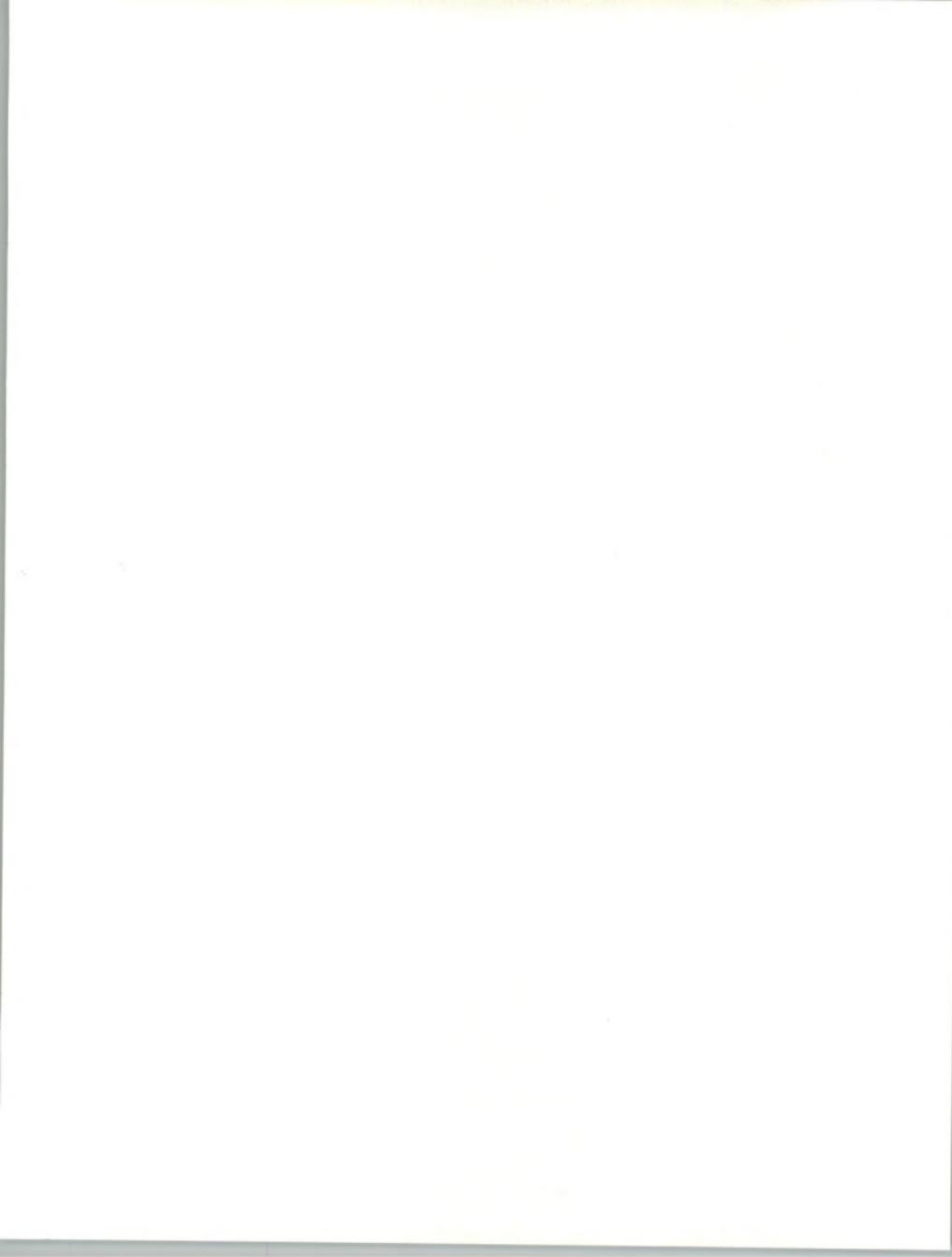
Since only a small percentage of all retailers are automated, the retail distribution market offers many opportunities to vendors.

The barriers to enter the market are mixed depending on the application or segment targeted.

- The presence of large, well-established vendors may be a deterrent. However, some large companies prefer to serve larger chains and franchises rather than independents or small chains.
- A large number of information services vendors target the retail distribution market; vendors must chose niches to target in order to compete successfully.
- The presence of these many vendors contributes to "noise" in the marketplace. Product differentiation and good sales, marketing, and advertising strategies will play a heavy role in success.

An important area of opportunity lies in retail management systems. Many retailers are finding that better management is needed in order to remain competitive.

- Careful selection of a niche is necessary to succeed. Vertical software and systems for specific segments of specialty shops are a good opportunity.
- Systems with communications capability for management of small chains are in demand.
- Microcomputer-based systems with capability for future expansion are



also in demand. Some smaller retailers need systems that can also serve as POS devices.

An area of opportunity for point-of-sale system vendors is price look-up at point of sale.

Bar coding technology is another area of opportunity as it spreads to include non-food and pharmaceutical items.

- Department stores and specialty stores will require systems and peripherals that will handle bar coding technology.
- Application systems such as inventory control, sales analysis, and employee productivity will be needed to take advantage of bar coding technology.

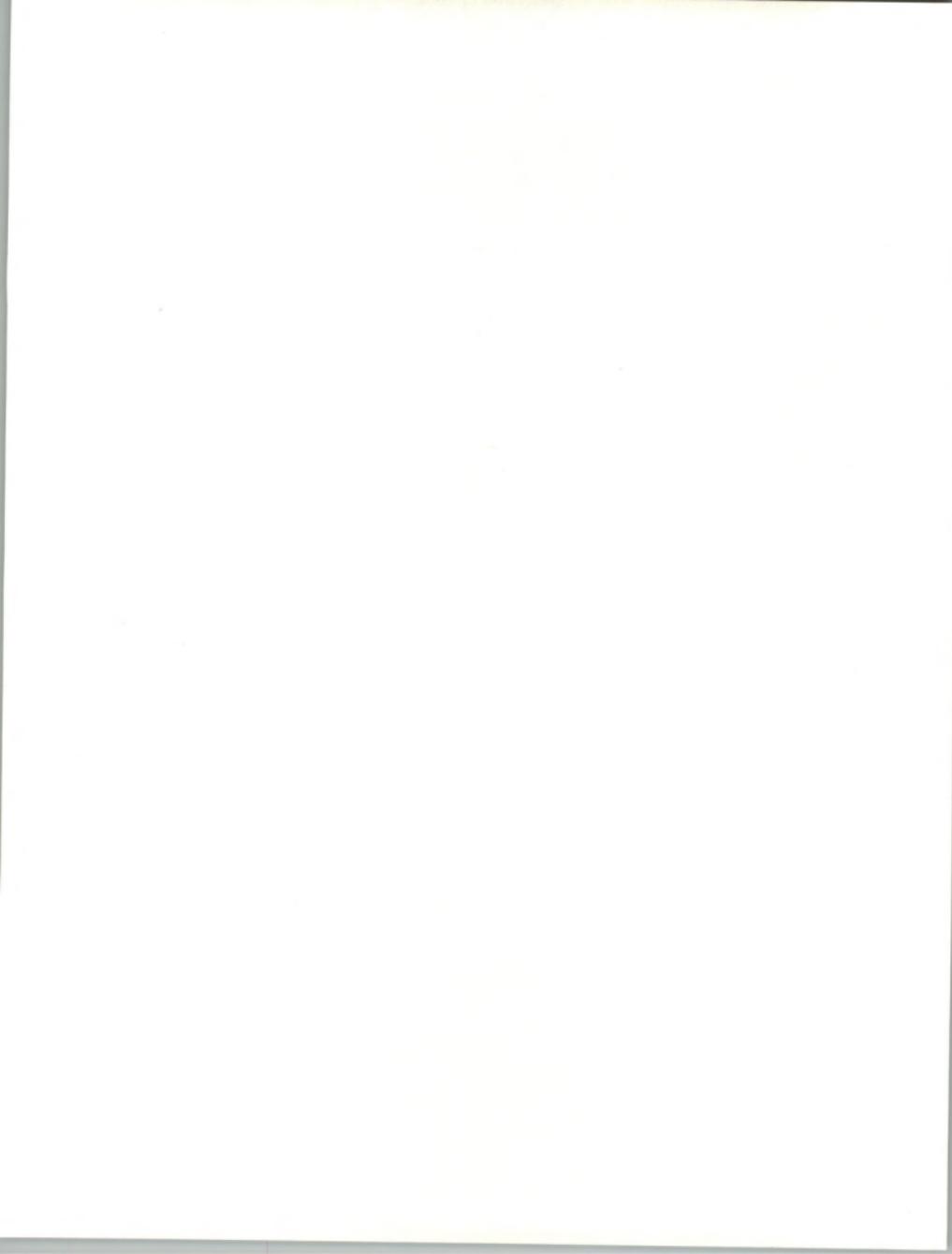
Marketing and merchandising systems are another area of opportunity for vendors in any retail distribution segment.

- Automation of store layout, price management, coupon and discount tracking, and other functions is in demand.
- Systems to track effectiveness of promotions and advertising are also in demand.



RD-A

Appendix: Forecast Data Base



RD-A

Appendix: Forecast Data Base

This appendix contains the following forecast information, as shown in Exhibit RD-A-1.

- Market size by delivery mode for each year from 1986 to 1992.
- Market growth rate for 1986 - 1992.
- Average annual growth rate (AAGR) for each delivery mode for the five-year period 1987 - 1992.

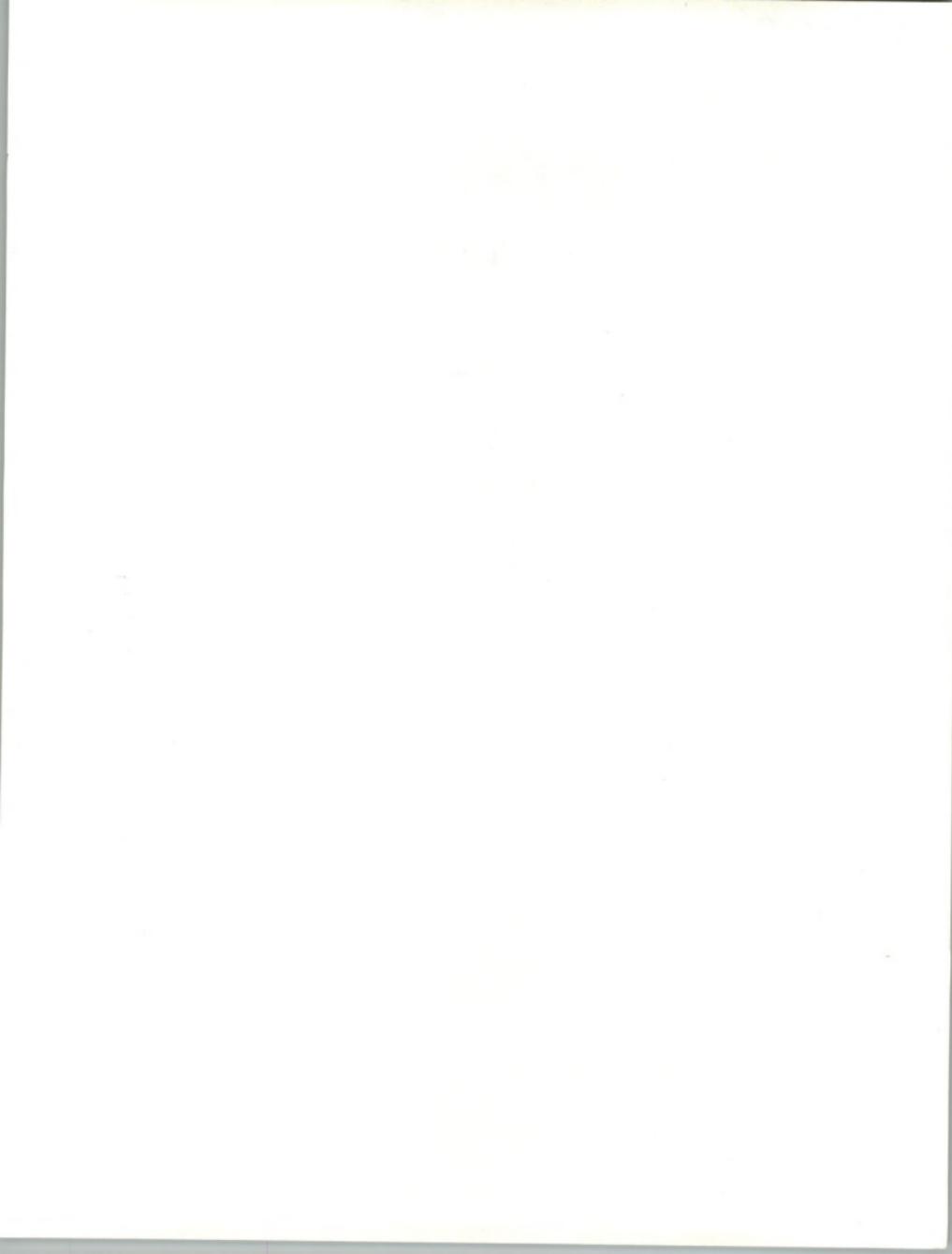


EXHIBIT RD-A-1

**DISTRIBUTION INDUSTRY SECTOR - RETAIL
USER EXPENDITURES FORECAST
BY DELIVERY MODE, 1986-1992**

SEGMENTATION BY DELIVERY MODE	1986 (\$M)	1986- 1987 Growth (Percent)	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	AAGR 1987- 1992 (Percent)
Processing Services									
Remote Computing/ Batch	564	17	659	771	894	1,029	1,173	1,325	15
Facility Manage- ment	16	13	18	20	23	26	31	35	14
Total Processing Services	580	17	677	791	917	1,055	1,204	1,360	15
Applications Software									
Mainframe/Mini	72	32	95	123	156	195	239	290	25
Micro	32	47	47	63	84	113	154	211	35
Total Applications Software	104	37	142	186	240	308	393	501	29
Turnkey Systems	227	30	295	366	439	509	573	630	16
Total	911	22	1,114	1,343	1,596	1,872	2,170	2,491	17



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